UNIVERSITY OF ALBERTA

Environmental Education in an Egyptian University

The Role of Teacher Educators

by

Solafa Goueli ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

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UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *Environmental Education in an Egyptian University: The Role of Teacher Educators* submitted by Solafa Goueli in partial fulfilment of the requirements for the degree of Doctor of Philosophy in International/Intercultural Education.

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To my Role models, mentors and friends
To my parents,
Taghrid Shararah and Ahmed Goueli,
who laid for me a solid foundation for the value of perseverance,
and whose nurturing love continues to guide every aspect of my life,
with all my love and eternal gratitude

ABSTRACT

Drawing on a holistic critical paradigm of ecological sustainability, this study examined the role of teacher educators in environmental education in the Faculty of Education of one Egyptian university. The study sought to critically and collaboratively explore with a sample of six teacher educators their answers, perceptions and perspectives in relation to their knowledge and understanding of environmental problems in local/global contexts and their meanings of curriculum and pedagogical practices for fostering environmental education in their teacher education programs. This study employed a qualitative research methodology which included interviews, participant observation, a survey questionnaire, document analysis, and finally a modified form of participatory action research engaging three of the six teacher educator participants.

The participants generally demonstrated a considerable amount of knowledge of the environmental realities and problems facing Egypt encompassing air, water and solid waste sectors. Their views concurred with national and official studies identifying these issues as the most pressing environmental problems in the country. The exploration of the institutional, social and cultural causes and developmental and/or global causes of environmental problems in Egypt led us to articulate different themes relating environmental crisis in Egypt to different issues. These issues included poverty, education, religion and development.

One of the major findings of the study was the participants' view that development was the major contributor to the environmental crisis in Egypt. They all stressed that, in its pursuit of economic growth, the government did not pay due attention to the environmental costs. Sharing perspectives from a critical paradigm of ecological sustainability, the participants felt that the government needed to clearly address the economic and ecological dimensions of development. In addition, a few participants affirmed that development is the thread that ties all the different factors

together bringing into the conversations other dimensions of development like the social, values, and political dimensions. Addressing the future dimension of development, all of them expressed the need for a development model that takes into consideration ecological as well as human well-being concerns.

The study also presented an overview of the participants' own definitions for environmental education based on their beliefs and emerging from their practices. It also explored the content and pedagogy of environmental education within the Faculty as well as the participants' own practices and reports on the action research phase of the study. The participants agreed that the environment needs to be viewed holistically that includes human beings in relation to each other as well as to other beings and their surroundings. While they all praised the role of educators, they also acknowledged the force of substantive challenges for promoting a critical paradigm of environmental education within the Faculty as well as in the whole education system and Egyptian society in general.

A major finding of the study was that the situation of environmental education in Egyptian universities need closer and immediate attention, and much work remains to transform education and adopt a framework that would integrate environmental education into the core of the educational programs of the Faculty.

In sum, the study yielded the following key recommendations for alternative policies in environmental education: the need for a re-examination and reconstruction of the courses that directly focus on environmental studies in terms of content and pedagogy, especially through the integration of perspectives and insights drawn from Egyptian cultural heritage and locally relevant sources of knowledge; the importance of enhancing the systematic integration of environmental issues into other courses in Faculties of Education; and the design of an inter-disciplinary course that addresses the relationships between education, development and environment in a holistic way and challenges students to promote environmental care within their future professional and work lives.

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CHAPTER ONE

BACKGROUND TO THE STUDY

Introduction: The Global Ecological Crisis

The environment is increasingly becoming an area of great concern all over the world. The scope of today's environmental problems is unprecedented: depletion and degradation of natural resources (e.g., energy, water, soil, fisheries); global warming; pollution; deforestation; destruction of the ozone layer; population pressure, and the escalating waste production of consumerist societies. These are only the most obvious signs of the stresses that the Earth is suffering as a result of human activities. Although these and other environmental problems are not new phenomena, their exponential growth over the last two decades led to the realization of their short-term and long-term impact on the very survival of the Earth (WCED, 1987; Schleicher, 1989, Serageldin 1993; UN-UNEP, 1992; Brown, 1991).

As a result of these compounding environmental problems, calls to stop environmental destruction and foster economic and social reforms have been made and acknowledged by leaders from North and South countries in a number of international conferences, events and reports. The realization of the damage done to the environment as a result of countries' pursuit of economic growth led to the recognition of the interaction between the environment and development at international gatherings such as the United Nations Conference on the Human Environment at Stockholm (1972), the World Commission on Environment and Development (WCED) in 1987, and at the United Nations Conference on Environment and Development (UNCED) in 1992, known as the Earth Summit. Ten years after the UN World Conference on Environment and Development in

Rio, the 2002 World Summit on Sustainable Development held in Johannesburg, South Africa confirmed the severity of the ecological crisis and the multiple challenges as we face and attempt to resolve these environmental problems. The recent controversy over the adoption of the Kyoto Accord on climate change, which was regrettably rejected by the USA, the largest contributor to global warming emissions, is but one illustration of the obstacles to reversing environmental destruction in the world. Warnings and concerns about the escalation of environmental problems and the threat of a global environmental crisis have also been articulated by people's movements, NGOs, and environmentalists worldwide (UN-UNEP, 1992).

These international events affirmed the impossibility of separating development issues from environmental ones; "ecology and economy are becoming ever more interwoven – locally, regionally, nationally, and globally – into a seamless net of causes and effects," (WCED, 1987: 5). As well-known environmentalists like David Suzuki (1989), Lester Brown (1998), Frank Barnaby (1988) and Mohamed Al-Qassas (2000) have emphasized, a holistic understanding of the state of the environment necessarily takes into account the dynamic relationships between environmental issues and economic, social, political and even cultural dimensions of development. Thus great impetus was given to the integration of environmental concerns and development goals in the broad concept of *sustainable development*. It was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (WCED, 1987: 43). The call for sustainability has also led to the adoption at the Earth Summit in 1992 of Agenda 21, which is considered a blueprint for sustainability for the twenty first century (Grubb et al., 1994). Likewise, at the follow-up World Summit on Sustainable Development (WSSD) in Johannesburg, 2002, governments, civil society and the private sector were urged to form partnerships in promoting sustainable development through new and strengthened initiatives towards implementation of Agenda 21 (UN, 2002; Gamil & Hamed, 2002; Desai, 2002). In remarks prior to the WSSD, the UN Secretary General Kofi Annan (2002) noted that while Agenda 21 and the Rio conference gave the "what" of the environmental crisis, WSSD must provide the "how" to attain sustainable development.

Ever since the Earth Summit, the idea of sustainable development has become increasingly popular. It has served as the theme of conferences, the jargon of development planners, the slogan of international aid agencies and the watchword of environmental and developmental activities. However, the concept has been the subject of a number of debates as many of its definitions (often incompatible) expose a range of approaches that are linked to different views, perspectives and paradigms.

The escalating growth of environmental problems is threatening to lead to a global ecological crisis with irreversible repercussions for the planet and its inhabitants. The situation reveals the existent power relationship between the North and the South. The hegemony of the North is manifested in its inequitable use of resource and the unsustainable strategies of development it promotes through the modernization paradigm (Johnston & Taylor, 1987). However, the effects of this development model, notably environmental problems, increasing poverty in the South, and the domination of the North's ideology affirming the primacy of profit and the market have proved the assumptions of the modernization or corporate-led globalization to be problematic. Furthermore, such modernization and globalization from above has redefined the values, understandings and attitudes of the South and undermined their indigenous knowledge, traditions and culture (Knudtson & Suzuki, 1992).

The urge for sustainable development must be coupled with a redefinition of our relationship to the environment and a reformulation of development policies to reach a sustainable level of living. Unless the issues of world inequality and poverty are addressed, transformation of people's values and lifestyles to promote environmental care will seem worthless to poverty stricken people in the South.

The importance of education as a way towards achieving a sustainable future has been stressed on a number of occasions over the last few decades. The

Stockholm declaration (1972) called for a program for interdisciplinary environmental education that would give due consideration to the underprivileged and broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension (Tolba, 1988). The Belgrade conference (1975) and the Tbilisi conference (1987) are landmark events of environmental education, stressing that environmental education demands global thinking and local actions (Schleicher, 1989). They also stressed the relation between humans and their environment arguing that environmental education should "foster clear awareness of and concerns about, economic, social, political and ecological interdependence in urban and rural areas" (Greig, Pike & Selby 1987: 26).

In addition, WCED (1987) emphasized the important role of teachers throughout the world in helping to reach the needed social change to bring about social and ecological sustainable patterns of development. Agenda 21 also promoted education, public awareness and training as vital ways to achieving sustainable future (Grubb et al., 1994). It pointed out their importance in creating ethical and environmental awareness and skills and attitude that are consistent with the goal of sustainable development. Agenda 21 recognized the role of both formal and non-formal education in enhancing awareness for sustainable development. It also called for integrating environment and development into educational activities and to be generalized from school to adult education for employees and in universities and to be even extended to decision-makers (UNEP, 1992). Likewise, the 2002 World Summit on Sustainable Development affirmed the continuing importance of education for sustainable futures (UNESCO, 2002).

Issues of Personal Interest

A valuing and appreciation of the environment emerged in my early years and has now become my deepest interest. As a little girl living in crowded city of Giza in Egypt, I always treasured my trips with my family to my home village. I used to feel the richness of the land when my father pointed to different crops on both sides of the road: cotton, rice, corn, cabbage and every imaginable crop depending on the season during which we were traveling. I learned from a very early age that the green color means life; life for farmers who farm the land and life to people who eat the harvest. In addition, I also treasured my days at the village waking up to the sound of birds and being able to watch farmers and their kids go to their farms. However, year after year, the green color decreased. Instead, urban centers were built on the fertile land and my village became an ugly imitation of the big city. The once fertile land is now barren and the damage done to it is irreversible.

As I grew up I began to understand the implications of the urbanization process on the lives of people. At the same time, I learned about environmental facts and problems from my father. With roots in the rural areas and as a professor of Agriculture, the environment was always a close issue to his heart. I learned to appreciate God's creatures and to never throw away what I can reuse.

During my graduate years in Egypt, I was convinced that the media plays an important part in setting the agenda of the people; that it was very effective in making issues salient. As a result, I participated in a research project to see the place occupied by the environment on the media's agenda. The results were shocking. We found that of the nine most salient issues in newspapers and on television news, the environment ranked eighth. The coverage of environmental issues was limited to straight news with no analysis given of the causes or effects for environmental problems (Al-Konaiessy, Goueli & Abd-Alazeem, 1991). Assessing the role of regional television in setting the agenda for the public, I found that although the environment ranked second in people's agenda, it occupied a very low position on both the media's agenda and the Government officials' agenda in the region (Goueli, 1993). It was then that I felt that action was crucial for enhancing care for the environment. I was lucky to join a group of artists who have been called "Friends of Art and Life". Their main goal is to help people see and appreciate beauty of nature and feel the oneness with nature and animals.

My concern for the state of the environment has also been sharpened through my course on Global Education at the University of Alberta. Readings and discussions in this course made me aware of the severity of environmental problems on a global level. I also learned to look critically at environmental problems and tried to assess their root causes, which are found in the economic world order in which we live. In addition, the enmeshing of environmental concerns with peace education, development education, and human rights education broadened my views and understanding of environmental issues.

Over the years, I became convinced of the urgent need to heighten environmental awareness in Egypt. Addressing environmental problems in Egypt necessitates a strong commitment to bring about radical transformation in people's values, lifestyle, and perspectives and to start a campaign for action to put a halt to environmental destruction. It was this commitment that urged me to become part of an international group of Egyptians waging a struggle for a better environment in Egypt. Our group (Green Egypt) is increasing in number every day. Green Egypt's bill of rights mandates that: All Egyptians should have the right to breathe clean air, to drink clean water, to eat non-contaminated food, to live in an environment free of toxic chemicals, to have their children and grandchildren grow up and live in a healthy and clean environment.

It is this strong commitment that motivated me to focus my research on Environmental Education in Egypt with the hope that the present state of the environment could be reversed for my and other Egyptian's children and grandchildren. Given my work in higher education, this study will focus specifically on the status of environmental education in an Egyptian university.

Environmental Situation in Egypt

Although Egypt has a unique position in the North East of Africa, the country stands at the cusp of a new century with a number of economical and environmental problems that could threaten its uniqueness. With a population approaching 68 millions, Egypt suffers an acute shortage of inhabitable land (only

4% of its area of 1 million square Km is inhabited). This area is under the threat of becoming a zone of contamination that endangers its people with pollution and health hazards, through industrialization, unsustainable development programs, the negligence, bad habits or indifference of some citizens, and/or lack of enforcement of laws addressing cases of irresponsible conduct (El-Nadi, 1997; Tolba, 1998; El-Henawi, 2001).

Although rich in fertile land around the Delta-Nile, the government of Egypt favored industrial development and urbanization -- following western models and formulas -- in its pursuit of economic growth. Untailored to fit the needs of the country, the adopted policies of modernization led Egypt into the debt trap and dependency relations from which it cannot escape (Instituto del Tercer Mundo, 1997/98). In addition, the paradigm that was adopted resulted in the now-classical consequences of benefiting the elite and widening the gap between the 'haves' and the 'have-nots.' It also gave rise to a number of environmental problems that remain unsolved.

Problems of pollution in its different forms are of grave concern. The World Health Organization (WHO) reported that the air pollution in Downtown Cairo is 10-100 times what is considered a safe limit. Home to a quarter of Egypt's population, Cairo has the third highest rate of air pollution among the world's cities (Hassanein, 1997). Accordingly, it is in the company of other cities like Mexico City, Bangkok, San Paulo, Delhi, and Tokyo, which are also among the worst urban centers in the world in terms of air pollution. A recent study shows that the concentration of lead in the air in some areas of Cairo can exceed by 20 times the maximum level set by the WHO. Meanwhile, the concentration of particulate matter (including lead) in Cairo's air and the average concentration of sulphur oxides and carbon monoxide are 4-10 times higher than WHO guidelines (United States Energy Information (USEI), 2000). According to this information, Cairo residents are under the risk of developing serious respiratory diseases and cancer from inhaling such particulates and others in the air. Hassanein (1997) concludes that one person out of every twenty-four persons living in Cairo will develop in a period of 5-25 years serious health problems (respiratory problems and cancer) that will result in premature death. Factors contributing to such grave air pollution include: the rapid increase in population and urbanization; increasing industrial activities; increasing mass mobility (using Gasoline-powered vehicles) between different regions of each city and increasingly intensive use of natural resources (Beshai, 1992; National Specialized Councils, 1993; El-Henawi, 2001).

Water pollution is another area of grave concern. Recent studies have shown that the quality of most Egyptian water resources has deteriorated due to uncontrolled discharge of industrial and domestic waste and uncontrolled use of pesticides, herbicides and fertilizers. Lack of adequate field drainage also leads to a continuous rise of the water table and serious land salinization. This 'water logging' contributes to the spread of nematodes and root disease (Beshai, 1992; National Specialized Councils, 1993; Ibrahim, 1984; EEAA, 2002). In addition, the Nile, Red Sea and the Mediterranean have recently suffered from oil pollution caused by navigation, industrial activities and seepage from oil reservoirs. The pollution of most of the Egyptian lakes is also a major problem. For example, the pollution of the Manzalah Lake, which is the largest in Egypt, led to the death of marine life in the lake. The lake used to be a major source of fish for Egypt, comprising 30% of fish production in the country (Al-Zahar, 1991; EEAA, 1998). The pollution of the seas, lakes and the death or toxication of marine life caused Egypt to import about 100,000 tons of fish annually. This also caused the price of fish (a cheap and available source of protein) to rise beyond the average person's affordability (Tolba, 1998). The pollution of fresh water and drinking water, apart from the urgent issue of scarcity, poses a health hazard in Egypt. The analysis of water samples from the Nile near Cairo, from a well in Sharqia (a city near Cairo) and from tap water indicated high bacteria and high concentration of heavy metals (lead) and organics (pesticides) (Hassanein, 1997). In particular, the Nile River which is often referred to as Egypt's 'artery of life' is "becoming a serious hazard to people…its water containing a chemical stew of heavy metals, dioxins, PCBs, DDT and other pesticides, untreated human and animal wastes, and disease-carrying bacteria " (Hassanein, n.d.: 1). In sum, health effects due to air and water pollution (respiratory problems, cancer, renal failure and lead poisoning) have been estimated to cost Egypt several hundred million dollars per year (Tolba, 1998).

Noise is another form of pollution that contributes to the environmental problems in Egypt. The Traffic Noise Index (TNI) in Cairo is classified as unacceptable (Beshai, 1992). This is mainly attributed to the high increase in the number of motor vehicles and the doubling over the last ten years of the volume of goods transportation. The spread of small workshops and individual activities in most cities also contribute greatly to the noise level (National Specialized Councils, 1993).

Other environmental problems in Egypt include the continuous degradation of soil resources and fertility in the Nile valley and desert areas. This is caused by the uncontrolled expansion of urban areas, mismanagement of irrigation water, inappropriate agronomic practices and chemical pollution. The deterioration in the fertility of the land is attributed to the absence of silt usually carried every summer by the Nile after the establishment of the High dam (Beshai, 1992; National Specialized Councils, 1993; Ibrahim, 1984). All these problems also contribute to the deterioration of Egypt's cultural heritage and monuments. Increasingly, too, the deepening problem of climate change threatens to submerge Egypt's low-lying delta region, while predicted fluctuations in sea levels and rainfall patterns will exacerbate Egypt's propensity to drought and shortage of fresh water supplies (United States Energy Information Administration, 2000; Al-Qassas, 2000). Last but not least, Egypt is facing a considerable loss of bio-diversity caused by destruction of habitat, land reclamation, urbanization, and unregulated and excessive hunting (EEAA, 2002; Al-Henawi, 2001).

Sharing the international concern over the degradation of the environment and the growing ecological crisis, as expressed at the Rio UNCED, the Egyptian Government has tried to implement sustainable development policies. As a signatory of Agenda 21, Egypt reformulated the goals of the Egyptian

Environmental Affairs Agency and established a new Ministry for Environmental Affairs in 1997 to coordinate plans and mechanisms consonant with the sustainable principles stated in the Rio Declaration. In pursuing this goal, the Agency, now under the umbrella of the Ministry of the Environment, designs a national strategy/action plan, policies and legislation/decrees concerning environmental protection. The agency also plays a crucial role in planning and supervising different development projects to assure their adherence to environmental laws in the country. Furthermore, it has collaborated with other Government bodies and external donors to monitor pollution and implement programs to improve air and water quality (United States Energy Information Administration, 2000; EEAA, 2002; USAID, n.d.). In addition, it provides a consulting service to different ministries, leaders and decision-makers on any issue regarding the environment. Also acknowledging the importance of education, mass media, and culture in fostering environmental awareness, the Agency has encouraged the Ministry of Education to include elements of environmental education into the curriculum at different educational stages. It has also encouraged publication of periodicals, booklets, and environmental newsletters that report foreign case studies to serve as examples of environmental activism (EEAA 1988; 1993; Ministry of State for Environmental Affairs, n.d.).

It is important to acknowledge, however, the views of analysts who cite contradictions in Egypt's official endorsement of Agenda 21 and challenge the relevance of the official vision of sustainable development to the people's needs and the health of their environment. As Gomaa (1997, 1998) and Tolba (1998) have argued, these policies and plans will be undermined by the government's reliance on development strategies promoted by the World Bank and IMF as a part of Egypt's pursuit of "economic reform".

Furthermore, another limitation in the Government's environmental policy and strategy lies in the sparing importance given to role of culture and traditional knowledge in fostering environmental awareness and concerns. Strategies for sustainable development and environmental education could benefit greatly from traditional practices related to the use of resources and the relationship between humans and their environment. One example is the Bedouins' interaction with their environment (Hobbs; 1989; Shararah, 1997). Dispersed in five desert Governorates of Egypt, the Bedouins know exactly the boundaries of their land where they have exclusive rights to use its natural resources. They have a spiritual-like relationship with nature, seeing themselves as a part of the natural world like all other beings with the belief that they have to live harmoniously with all living things. They endeavor to protect natural resources and maintain balance with their environment. Living sustainably is one of the continuous practices of Bedouins as they conserve water and energy because of scarcity and fully maximize use of other resources (e.g., palm trees; discarded or abandoned war equipment). Women also play an important role in caring for the environment as they are the ones responsible for recycling and utilization of waste, preparing and preserving food in an environmentally friendly way, keeping the family's budget and preserving other scarce resources (Shararah, 1997).

In terms of the participation of civil society in Egypt's environmental situation, the past decade since the Rio Summit has witnessed an increasing and important role of NGOs in addressing environmental problems. NGOs are consulted by the EEAA in drafting of policies and legislation, and are called on to implement various projects and training programs (Atwa, 2002). This role and collaboration has been enhanced since the Johannesburg WSSD, consistent with the Summit's emphasis on the crucial importance of partnership between Government, NGOs and the private sector in protecting the environment (Gamil & Hamed, 2002; Afendi, 2002). In sum, there has been a steady increase in the number of environmental NGOs in Egypt, viewed in general as contributing positively to and complementing the Government's efforts in protecting the environment. However, Kandil (2002) has posed a criticism worthy of further consideration, namely that these NGOs seem to be "merely scratching the surface and have not dealt with the root causes of the environmental problems". Furthermore, in her view, they have not based their work on research studies that take into consideration the needs of both the Egyptian people and environment.

Environmental Education in Egypt

Over the past decade, environmental education has been acknowledged as an important dimension of the Egyptian Government's environment and development policies. As articulated in the National Environment Action Plan of Egypt 2002/17,

The Government of Egypt, through the MSEA, Ministries of Education, Higher Education and State for Scientific Research, Industry, Business and Foreign Trade, together with the private sector and NGOs, had established a program that aims to integrate an environmental component into all levels of school/university curricula and promote environment and development concepts in all educational programs, confirm and deepen the concepts of, and establish mechanisms for environmental protection among young children; and increase overall quality and access to education, formally and informally, for all society including marginalized sectors, such as women, youth, children, the elderly and the physically disabled (EEAA, 2002: 158-159).

Key goals and objectives of environmental education in Egypt have also been outlined in a number of studies consonant with the vision of various intergovernmental conferences and international agreements (Ibrahim, 1984; Selim, 1993; Hassanein, 1991). They include: (1) developing an understanding of the environment and its impact on human life; (2) recognition of the interrelatedness and interdependence between humans, other living things and the earth that supports them all; (3) dispelling the notion that science and technology are capable of solving all environmental problems; (4) giving the opportunities to individuals to gain knowledge, values, attitudes, commitment and individual skills for the protection and the preservation or conservation of the environment.

Among the multiple activities and programs that have been undertaken in Egypt in environmental education, some interesting examples listed in the National Environment Action Plan of Egypt 2002/17 include:

- Preparing strategies for integrating environment and development as a cross cutting issue into educational curricula at all levels.

- Preparing and document and educational supplement addressing the specific environmental nature of each region
- Establishing a national advisory education coordinating board or round-table, representative of various environmental, developmental, educational, gender and other non-governmental interests to mobilize funding and encourage partnerships and information exchange
- Developing training programs for teachers, administrators, educational planners as well as non-formal educators to address the nature and preferred methods of incorporating environment and development in education
- Involving school children in local and regional studies on environmental health, including safe drinking water, sanitation, food, and ecosystems.... (and) 'Friends of the Environment' clubs...
- Enhancing and supporting environmental science, biodiversity conservation, sustainable environmental management, and similar cross-disciplinary programs in universities and other tertiary institutions
- Promoting non-formal environmental education, especially for marginalized sectors which uses an innovative range of teaching methods and settings ...
- Creating radio and television programs with new environmental concepts that depend on the specialties in certain subjects (EEAA, 2002: 159).

In past decades, environmental education has been undertaken mainly by the formal education sector, although some initiatives have also involved the media and mosques (Selim, 1989, 1993). In 1975, as a part of the Arab League Educational Scientific and Cultural Organization (ALECSO), Egypt in collaboration with other Arab countries started a very ambitious environmental education program (Selim, 1990). The main objective was the preparation of a body of information to help curriculum planners, textbook writers, teachers and supervisors to incorporate environmental education into the curriculum content of all subjects at the general education levels. Most of the content dealt with issues and problems in the Arab States with pertinent examples from other parts of the world. To help educators incorporate the content of the resource book into different curricula, a number of workshops were held and attended by teachers, supervisors, teacher educators, University Professors and specialists in educational technologies. During the workshops, participants constructed three curriculum modules, one for each school level: primary, preparatory and secondary. "Helping the teachers develop their own curriculum modules promoted their awareness of environmental issues and helped them in planning and carrying out successful environmental educational activities" (Selim, 1990:11).

Within its ambitious plan of including environmental education within formal education in Egypt, the government mandated the integration of environmental issues and/or concepts in all subject areas in the primary and secondary levels. With the realization that most curricula at the primary level paid little attention to environmental education, a number of workshops have been held in collaboration with two universities to develop environmentally oriented curricula (El-Sayed, 1992; Selim, 1993; 1995). The idea of the environmental orientation to the curriculum was thoroughly discussed by the group involved in order to make different parts of the curriculum sensitive to the environment. Although the same procedure was not followed for secondary levels, it was stressed that students should be provided with different information regarding pressing environmental problems around them on the local, national, and global level. Thus, environmental education was included in different subject areas of the geography, biology and chemistry curriculum (Selim, 1995).

In spite of these efforts to make the environment an integral part of the school curriculum, the curriculum as a whole failed to provide students with basic environmental information. Therefore, it did not help them develop positive attitudes towards the environment. This was attributed to shortcomings in the curriculum itself in addition to the teachers' failure in addressing environmental issues or fulfilling goals of environmental education (El-Sayed, 1992). El-Sayed (1992) and Selim (1993) stated that the successful implementation of environmentally oriented curricula necessitates the recruitment of teachers who are aware of environmental problems on the national and international levels, and who are competent enough to try to carry on environmental activities directed towards enhancing environmental education. Research shows that teachers did not get any in-service training to familiarize them with the new curricula. In addition, teacher handbooks were not available. Contributing further to the problem was the fact that textbook writers did not have the least idea about environmental education, its principles, activities or goals. Thus, their writings fell short of its goals (Selim, 1993; 1995).

The recognition of the importance of the role of teachers in environmental education led to Egypt's growing interest in enriching teacher education programs with environmental education. The goals and objectives of environmental education programs included providing student teachers with basic information about different environmental sciences and clarifying the close relationship between the physical components of the environment and its social, economic, and psychological aspects. In addition, such programs would develop their awareness of environmental problems, help them acquire necessary skills in their teaching careers, and be able to prepare their future students to act as responsible citizens towards the environment. Furthermore, the programs would also facilitate the student teachers learning to use of different technologies and other media that can lead to successfully implement environmental education objectives and help them develop skills and abilities necessary for evaluation (Selim, 1989; Hassanein, 1991).

Despite the attention accrued to the inclusion of environmental education in the teacher education programs in Egypt, the situation is still far from satisfactory (Hassanein, 1991; Morqos, 1980; El-Sayed, 1984; Ibrahim, 1984; Selim, 1993). The evaluation of teachers' knowledge and understanding of environmental issues was not positively affected by the programs as they could not master the necessary skills or develop the attitudes that could help them explain the complexity of environmental problems to their students. Furthermore, the content of the programs showed that there was an imbalance between different academic, cultural and educational training for teachers. It was also obvious that the main concern of the teacher education program was developing cognitive knowledge in the area of specialization, along with a philosophy of teaching in general. This had a limited effect in training teachers in skills, methods and materials needed to be effective environmental educators.

However, some successful efforts to enhance environmental education have been carried out by Ain-Shams University. The Faculty of Education at this University undertakes a program of in-service training for elementary school teachers (Selim, 1990). An extensive program of environmental sciences and environmental education is a requirement for all teachers in the program.

Studying the environment has been a part of different subject areas in Egypt. However, it was always reduced to working or studying about the environment rather than the wider concept of working or studying for the environment, which aims at creating the attitudes and developing skills necessary to face environmental problems. There is a great need for the revision of the existing teacher education program as goals and objectives of environmental education are usually influenced by the educator's conception of the environment.

Conceptual Framework

Prior to presenting a statement of the research problem and questions, it is pertinent to initially highlight some key conceptual and theoretical underpinnings of this study related to the environmental crisis and to the broad field of environmental education. Clearly, from the time of the earliest human civilizations, human beings have been faced with a constant tension between population growth and economic development, on the one hand, and the use of natural resources and ecosystems on the other (Samson, 1995). In recent decades, this tension has led to an ecological crisis and generated concerns and questions over the directions of development at local, national, international and global levels, including its impact on the environment. Consequently, the concept of "sustainable development" has emerged and has become a ubiquitous aspect of virtually every national and international policy document related to economic and social development.

The term "sustainable development" was popularized by the World Commission on Environment and Development (WCED, 1987: 43) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Furthermore, although the Commission stresses the link between poverty and environmental degradation, it also strongly promotes a strategy of economic growth to alleviate poverty and resolve environmental problems. This concept of sustainable development has subsequently been endorsed and promoted by successive international conferences and many states, especially at the United Nations Conference on Environment and Development or Earth Summit (UNCED, 1992). In 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg reaffirmed a commitment to sustainable development, while recognizing many ongoing challenges including poverty, inequalities, and escalating environmental destruction (United Nations, 2002).

Since its popularization, the concept of sustainable development has been viewed as being vague and ambiguous by a number of analysts (Starke, 1990; Goudzwaard & de Lange, 1995), while others see it as laden with contradictions (Redclift, 1993; Lele, 1991; O'Rirodan, 1993; Mele, 1995). Most importantly, the concept is critiqued for ignoring the reality that needs are invariably shaped by the interests of different societies (Redclift, 1993; Norgaad, 1994). Thus, it does not question the way the North countries are already living beyond their limit and currently satisfy their needs at other people's expense, as well as the problems of intra- and inter-generational equity between different societies and between North and South (Redclift, 1993). Furthermore, the Commission failed to address the fundamental contradiction between economic growth and sustainability, whereby the economic growth policies adopted and implemented by the North have benefited the industrialized nations while accentuating poverty and environmental degradation in the South (Graf, 1992; De la Court, 1992). Likewise, the Commission failed to call for radical transformation of the dominant system of production (Fien and Trainer, 1993).

Without a clear definition, *sustainable development* has been flexible enough to fit different agendas. Woodhouse (1992) for example, outlines three different views: the *neo-liberal* view where orthodox economic principles (e.g., market, profit) govern the use of environmental resources; the *populist* perspective which accords priority in development for the poorest groups within communities; and the *interventionist* view relying on international environmental agreements and treaties by international agencies. A limitation of this third view, however, is that such intervention may in reality be promoting a neo-liberal agenda (George, 1986; Rich, 1993).

Another helpful framework contrasts the technological and eco-centric pathways or worldviews of environmentalism based on different ideologies and values derived from the Dominant Social Paradigm (DSP) and the New Environmental Paradigm (NEP) respectively (Turner, 1993; Fien, 1993). The technological view advocates the values of the DSP, which relies on an unequal power structure, views resources as inexhaustible, and promotes excessive consumerism and a faith in science and technology as engines of growth (Milbrath, 1989; Samson, 1995). Environmental problems are dismissed as external or unimportant in the pursuit of economic growth (Redclift, 1987; Fien, 1993). In recent decades, however, a variant of the technological worldview has acknowledged that economic growth can cause environmental problems, such as the *light green* approach (Fien, 1993); environmental economics (Redclift, 1987; Munasingh, 1993) and shallow ecology (Naess, 1988). Nonetheless, this perspective remains essentially reformist (Redclift, 1987) and continues to disproportionately benefit dominant groups namely North and South elites, the transnational corporations and international financial institutions.

In contrast, the eco-centric worldview adopts the values and beliefs of the New Environmental Paradigm (NEP), which avoids an anthropocentric view of human beings in the world; recognizes the ecologically destructive impact of human actions through economic development, as measured, for example, by the "ecological footprint" (Wackernagel & Rees, 1995); advocates the use of 'appropriate' technology (Arcury, Johnson & Schollay, 1986; Milbrath, 1989), and upholds the values of cooperation, openness and participation, and calls for a new politics based on justice, democracy, human rights, and global sustainability (Suzuki, 1989; Shiva, 2000; Goodland & Daly,1992). More specific strands within the eco-centric worldview include the Gaianist, dark green or the deep ecology approach which values people-nature relationship in spiritual terms and calls on humans to recognize their oneness with the earth and undertake required changes in consciousness and lifestyles (Naess, 1973; 1988; Braidotti et al., 1994). The stress of deep ecology on the importance of transformation of personal values could solve part of the environmental problem. However, this solution would not be sufficient in challenging the hegemony of the DSP power of its advocates and in achieving social justice and equity.

The second strand within the eco-centric worldview is the red-green or eco-socialism, which identifies the ecological crisis as rooted in the crisis of capitalism, and argues for more harmonious and socialist relations between people as a basis for harmonious relations with nature (Huckle, 1988; Wallis, 1992; Pepper, 1993). To eco-socialists, a transformation of social and economic structures is crucial, resulting in equal distribution of resources and power to help ensure the sustainable use of resources for present and future generations (Huckle, 1988; Wallis, 1992).

A third strand of thought within the eco-centric view is eco-feminism, which has evolved from various social movements, notably the feminist, peace and ecology movements, joining in the view that both women and nature are oppressed by patriarchal power structures (Adams, 1993; Mies & Shiva, 1993). Eco-feminism promotes the transformation of patriarchal values, which are dominant in society, and believes that women's capacities or values such as empathy, caring and inter-connectedness of all things can help to develop less violent and more sustainable ways of living and people-planet relationships. In sum, the eco-centric worldview gives substantive consideration to the environment and for humans. In my view, however, the three positions need to collaborate in constructing a comprehensive paradigm for the sustainability of humans and the environment.

Reviewing these different positions and paradigms, it becomes apparent that the WCED report, the Rio Declaration and Agenda 21 are embedded in the Dominant Social Paradigm. By stressing economic growth, the use of high and hard technology to "solve" world poverty, and minimal improvements in environmental legislation and management practices, they advocate a "very weak sustainability stance" (De la Court, 1992). These documents offer a reformist approach to pressing environmental problems, leading to further environmental deterioration and continuing rich-poor gaps. Although the governments, multilateral agencies, TNCs and some NGOs attending the recent WSSD would claim that the Summit has made "significant progress" towards implementing sustainable development (United Nations, 2002: 2), several critical questions have been raised to challenge this claim. These include weak targets for increasing the use of renewable energies and fulfillment of basic human rights as well as the co-optation of sustainable development by corporate-led interests (United Nations, 2002).

In opposition to the view of WCED, various analysts have proposed an alternative paradigm that highlights the challenges posed by the unequal global power structure. De la Court (1992), for example, suggests six principles of sustainable development: cultural and social integrity, the ecological principle, the solidarity principle, the emancipation principle, the non-violent principle and the error-friendliness principle, which constitute a "very strong sustainability stance." In this regard, advocates of the NEP nowadays often prefer the concept of sustainability rather than sustainable development.

Furthermore, the Dominant Social Paradigm of environmentalism needs to be critiqued in relation to the contemporary phenomenon of globalization, whereby capitalist structures and relationships have undermined the economical and political sovereignty of nation states in favor of the Trans-National Corporations (TNCs) and international financial and economic institutions (e.g., World Trade Organization or WTO; IMF; World Bank), promoting strategies that widen the rich-poor gap and accelerate environmental destruction (Barnet & Cavanagh, 1994, Brecher & Costello, 1994; Harris, 1996; Beveridge, 1996; Godblatt et al., 1997).

In contrast, the New Environment Paradigm stresses the concept of "green justice", whereby key root causes of the ecological crisis can be found in the structures and relationships of global injustice (New Internationalist, 1993). Hence, transformation towards global and local justice is integral to authentic sustainable development or sustainability, as has been highlighted in the growing social movements representing globalization from below led by civil society groups and communities (e.g., World Social Forum; peoples' summits (Brecher, Costello & Smith, 2002).

In recent times, the much-publicized environmental or "green" concern of corporations needs also to be demystified. As analysts have argued, corporations are good at masking their unsustainable practices via programs of "voluntary "corporate responsibility as well as collaboration with international agencies that are in reality "greenwashing" to avoid accountability (CorpWatch, 1997; Kerlinger, 1997; Beder, 2002; Bruno, 2002a, 2002b).

Finally, a New Environmental Paradigm of sustainability needs to draw insights of sustainability from the wisdom of diverse cultures and civilizations, including the ancient Greek vision of 'Ge' or 'Gaia' as the Goddess of the Earth (O'Rirodan, 1993). This also includes the values of indigenous, aboriginal or First Nations peoples worldwide that uphold living in harmony with and sacred respect of mother earth (Burger, 1990; Knudtson & Suzuki, 1992; Rajotte, 1998). In addition, environmental values and wisdom are also present in the teachings and doctrines of religions or faiths in diverse regions and civilizations, including: the key values of stewardship, ecological justice and caring for creation advocated by "green" Christian theologians (Regenstein, 1991; Barbour, 2000); the environmental ethics of Islam that regulate every aspect of human life and view human beings as God's trustees who take care of the earth and its inhabitants (Izzi Dein, 1989; Abu Sway, 2002; Islamset, 2002); the Buddhist teaching of the eight-fold path; the Hindu belief in the unity of all creation; the Jainist commitment to non-harming of all beings; and the Daoist principle of yin and yang (Regenstein, 1991).

In sum, the concept of sustainable development needs to be critically understood through alternative paradigms, which will provide a useful framework for critical analysis in describing my study on environmental education in an Egyptian university. Clearly, in order to make a paradigm shift to sustainability, education has to play a fundamental role in moving from the Dominant Social Paradigm to the New Environmental Paradigm. Furthermore, in order to counter the forces of corporate-led globalization, the role of teachers and teacher educators is vital in promoting critical thinking; challenging the root causes of global problems; and instilling the principles of "think globally, act locally", as well as "think locally, act globally" (Bacchus, 1996; Beveridge, 1996; Harris, 1996). However, as the next section elaborates, as with concepts like environmentalism and sustainable development, it is also essential to examine and deconstruct alternative paradigms of environmental education.

Since the late 60s, environmental education has become well known, especially in North countries, although over the last decade or more, it has also expanded within South educational systems and communities. In this regard, the influential role of different intergovernmental conferences needs to be acknowledged. The United Nations Conference on the Human Environment, held in Stockholm 1972, for example, stated that

Education in environmental matters for the younger generations as well as adults...is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individual, enterprises and communities in protecting and improving the environment in its full human dimension" (UN Conference on Human Environment, 1972).

In turn, environmental education was given further impetus by the 1975 Declaration of the Belgrade Charter (Schleicher, 1989) and the first Intergovernmental Conference on Environmental Education held in Tblisi in 1977 which declared that environmental education needs

1. to foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas;

2. to provide each person with opportunities to acquire the knowledge, values, commitments and skills needed to protect and improve the environment;
3. to create new patterns of behavior of individuals, groups and society as a whole towards the environment. (UNESCO-UNEP, 1978: 3).

Reaffirmed at the Tbilisi Plus Ten Conference held in Moscow in 1987 (UNESCO-UNEP, 1988) and by the Brundtland Commission (WCED, 1987: XIV), these pedagogical goals were centrally endorsed and elaborated by Agenda 21 of the 1992 Earth Summit. Chapter 36 of that document states that "education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues" (UN-UNEP, 1992). Most recently, the 2002 World Summit on Sustainable Development in Johannesburg affirmed in Chapter X of its Plan of Implementation the goal of integrating "sustainable development into education systems at all levels of education in order to promote education as a key agent to change" (United Nations, 2002: 61-62).

In sum, over the past three decades, a strong consensus has emerged among governments, international and national agencies, policy-makers and educators regarding the central role of education in promoting environmental care and sustainable development. Environmental education is necessary for changing values, attitudes and behaviors towards an environmentally sensitive and holistic way of life attuned to the interconnectedness and interdependence within the web of life -- ecosystems, peoples and their cultures. Nonetheless, while there may be general agreement on goals and purposes, as reflected in the international documents summarized above, the existence of alternative paradigms of environmental education needs to be recognized.

However, before elaborating on these paradigms, it is also important not to view environmental education in isolation from parallel and/or complementary initiatives in transformative education. In this regard, environmental educators are engaging in dialogue and collaboration with advocates for the broad, multidimensional field called peace education or in some contexts, global education. A central theme in peace/global education is the profound interrelatedness and interdependence of all parts of the earth, including humanity, and encompasses values like *planetary stewardship*, global *citizenship*, and *human relationship* (Reardon, 1988). Educating for a culture of peace is also necessarily a multi-dimensional project, including educating for nonviolence, disarmament, local/global justice, human rights, cultural solidarity, environmental care and personal peace (Hicks, 1988; Selby, 1993; Haavelsrud, 1994; UNESCO, 1995; Burns & Aspeslagh, 1996; Smith & Carson, 1998; Toh & Cawagas, 2000). In his work, Hicks (1988: 15) has included ecological responsibility for both the local and global environment in his list of key attitudes to be developed in educating for peace, while Toh and Cawagas (2000: 370) have emphasized the value of "caring for the seven generations", which "reminds us of the profound wisdom of indigenous teachings on the importance of living in peace with Mother Earth, and hence of the need for development that promotes sustainability, not environmental destruction."

Turning now to the question of paradigms of environmental education, one framework has been suggested by Fien (1990, 1993) who identifies three approaches to environmental education: education *about* the environment, education *through* or *in* the environment and education *for* the environment. Education *about* the environment is the most common form of environmental education. It promotes the ideology of the Dominant Social Paradigm; emphasizes teaching facts, concepts and generalizations about environmental patterns, processes and problems; relies on technical solutions to environmental problems; neglects values and the affective domain and reproduces the ideas, skills and attitudes that support the status quo (Huckle, 1985; Bradley, Waliczek & Zajicek, 1997).

Education *through* or *in* the environment is a learner-centered approach to environmental education, and relies on raising environmental awareness by linking students' learning to their experience in the environment (Fien, 1990). It is designed to make learning experiences realistic, relevant and practical (Orr, 2003) through "outdoor" experiences in which the students interact with nature (e.g., Powell, 1987; Pollard & Pedler, 1989; Neal & Palmer, 1999). However, as Fien (1993) has argued, the role that education *through* the environment plays in challenging the causes and mobilizing action to resolve environmental problems is minimal.

In contrast, the third paradigm, education *for* the environment, sees the process of transformation as essential. As Fien (1990: 34) and others have argued, the values transformation necessary to promote sustainable and socially just lifestyle choices requires education *for* the environment (Lucas, 1979; Huckle, 1983; Robottom, 1984; Maher, 1986; Greenall Gough, 1990). This view is based on the premise that education is not neutral, but rather a critical approach which builds on education *about* the environment and education *through* or *in* the environment to help students become informed, sensitive, responsible and competent participants in challenging the status quo towards building a New Environmental Paradigm. Likewise, Orr (1992) advocates for an 'Earth-centered' education to produce "ecologically literate people with the knowledge necessary to comprehend the interrelatedness of an attitude of care and stewardship". In his ongoing work, Fien (1995, 2000) has emphasized the complementary term of *education for sustainability* which, premised on similar principles of education *for* the environment, is a new paradigm for developing an informed, involved, socially literate citizenry committed to actions for sustainable futures (Fien & Maclean, 2000).

To make environmental education effective in promoting environmental understanding, social and environmental values and attitudes, many critical scholars have argued for a new ecological ethic (Schleicher, 1989; Rashty, 1992; Bonnett, 1999; Mische, 1999). Promoting fundamental changes in dominant human values, attitudes, this global ethic promotes principles of the transformative paradigm including the interdependence of all-living things, respect for nature, holism, respect for future generations, sustainable development and self reliance and participation (Emmelin, 1986). Globally, educators across grassroots communities, NGOs, institutions and other civil society groups have also promoted an educational program based on the Earth Charter which advocates a holistic and global ethic for a more sustainable way of living (Mackey, 2002).

This paradigmatic shift in environmental education and education for sustainable development towards education for the environment and for sustainability cannot proceed effectively, however, unless supported by complementary changes in teacher education. As agencies and scholars like UNESCO and UNEP (1990) and Fien & Maclean (2000) have stressed, the preparation of teachers is "the priority of priorities."

Last but not least, education for sustainability calls for an appropriate pedagogical strategy. In the field of teacher education, the importance of the reflection-in-action model of teacher education has been stressed by several scholars (Hart, 1990; Fien and Rawling, 1996; Fien & Maclean, 2000). More generally, the pedagogy of education for sustainability has to be consistent with the principles of the transformative paradigm (e.g., peaceful and democratic teaching-learning processes, dialogue; critical, creative participatory strategies; discovering root causes of problems; action for transformation) (Freire, 1970; 1985; Hicks, 1988; Reardon, 1988; Selby, 1993; Greig, Pike & Selby, 1989; Toh & Cawagas, 2000; UNESCO, 2001; de Mello & Zuber, 2002;) Only when it is transformation oriented will education for sustainability help students make the shift from the values of the Dominant Social Paradigm to the values of the New Environmental Paradigm.

The Research Problem

Environmental education is hardly a recent concept. Although there is an unlimited amount of literature on the subject, research on this area had been confined mainly to education about or through the environment. In Egypt, environmental education is still in its infancy. Most environmental education that can be found in schools is at the elementary and secondary levels concentrating mainly on explaining environmental problems rather than investigating their root causes, teaching students the necessary problem-solving skills, or encouraging a change of students' attitudes towards the environment. At the tertiary level, environmental issues are usually addressed, if at all, in courses as Biology, Chemistry and Physics. In addition, several institutions offer graduate programs in the field of the environment and in the field of environmental education. The rate of establishing specialized institutions for environmental studies and research is also on the rise. In Cairo, Ain Shams University initiated this move by having an Institute for Environmental Studies and Research (Ain Shams University, 1996-97). It is a postgraduate institute that offers diploma, M.Sc., and Ph.D. Degrees in Environmental Sciences. In addition to its formal activities, the Institute plays an important role in non formal education. Over the last ten years, it has been continually involved in training of decision-makers in different sectors: engineers, and other experts in water supply, sewage, food quality, agriculture, and industry. They are trained on how to use modern equipment and make decisions favorable to the environment. The Ability to detect environmental problems and the development of the skills to solve them are among the objectives of the program. On the whole, the Institute, together with the Egyptian Environmental Affairs Agency and different Faculties at the Ain Shams University, all play a major part in the process of making the environment a salient issue on the public agenda.

In the field of research, a variety of environmental activities were undertaken by individuals and different institutions but these were largely uncoordinated. This research covered several areas ranging from pollution to environmental education to the effects of industry on the environment. However, the results have been unmonitored. The Institute for Environmental Studies and Research now acts as a coordinator of different research in the field of the environment and is becoming a major source of information about the environment in Egypt.

Due to the lack of in-depth research on environmental education that could lead to positive attitudes towards solving environmental problems, I have chosen to do the study on environmental education in Egypt with the objective of improving theory and practice (policy, curriculum and pedagogy). My focus on the tertiary level is due to several reasons. First, I have experienced teaching at this level, which familiarizes me with the processes of teaching and learning used in this context. Second, the role of the university in teaching of environmental education is crucial as it graduates young people who will often go on to fill strategic roles in various fields. Third, the focus of the study is the teacher education program at the Faculty of Education at Heliopolis University based on the belief that educating teachers is the most crucial part of the educational process. This importance is related to the fact that the students in this Faculty will, in turn, teach their own students in schools and, thus, have a major effect on their lives.

In summary, the study will explore collaboratively and critically with teacher educators, their meanings, knowledge, and emergent practices in fostering environmental education in their teacher education programs. It will facilitate possible action by teacher educators to improve their curriculum and pedagogy with the goal of empowering their students to think and act critically for building a sustainable future. Thus, collaboratively with teacher educators, we will try to gain an understanding and knowledge of environmental problems in Egypt and their causes; their meaning of environmental education; the themes and/or processes that constitute the scope and content of their environmental education curricula; and their pedagogical strategies in teaching environmental education. We will also explore their constraints and concerns in the implementation of environmental education, the successful strategies that they have used to address those constraints and concerns, and future possibilities of action that could help to improve the curriculum and pedagogy for fostering environmental education at the Faculty. Specific action taken on behalf of the environment by participants during the research will provide insights and implications as to how their students may be empowered to effectively implement environmental education in their professional life. This will also help explore possible future actions for fostering environmental education within the selected faculty.

As a participant in the research, I will bring into the conversations themes and issues that relate to environmental issues on the local, national, and global level; sustainable development; indigenous traditions; and cultural perspectives that address the relationship between people and their environment. This could help in widening the borders of environmental education as viewed by the participants and have implications for the inclusion of diverse cultural and traditional perspectives into their curricula.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter presents a review of the literature on issues and concepts related to the environmental crisis and to the broad field of environmental education. More specifically, the synthesis initially focuses on the concept of *sustainable development* as it has been formulated by various international conferences, movements and scholars. The differences in conceptualization provided by alternative paradigms of environmentalism will also be explored. In the second part of this chapter, I will reflect on the theory and practice of environmental education, again differentiating between different paradigms, and finally advocating that education for sustainable development needs to be transformed towards the vision of education for sustainability.

Sustainable Development

From the time of the earliest human civilizations, human beings have been faced with a perennial tension between population growth and economic development, on the one hand, and the use of natural resources and ecosystems on the other (Samson, 1995). While positive lessons can be drawn from past societies and communities that have learned to live in relative harmony with the earth, there is also evidence that some early human groups have also caused environmental damage through ecologically destructive and unsustainable activities (e.g., deforestation, soil degradation, mining) (Goudie, 1989).

The term 'sustainable development', however has only been recently coined. It appeared on international arena during the pre-Stockholm Conference negotiations. At this time, Third World or South countries succeeded in establishing the link between environmental problems and economic growth. The 1972 Founex Report demonstrated this link and argued that "environmental problems had their origin in poverty and industrialization" (Williams, 1993: 18). Founex also concluded that "environmental problems do not only result from the development process itself, but also from the very lack of development, such as poor water, inadequate housing and sanitation malnutrition and disease" (Bartelmus, 1994: 6). The established link between the environment and development paved the way for the coinage of the term "sustainable development", which was popularized by the World Commission on Environment and Development chaired by Gro Harlem Brundtland (WCED, 1987: 43) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Intergenerational equity is thus one of the important objectives of sustainable development. As the Commission argued, "we borrow environmental capital from future generations with no intention or prospect of repaying ... (and) they can never collect on our debt to them" (WCED, 1987: 8). Furthermore, while the Commission highlighted the link between poverty and environmental degradation, it stresses the strategy of economic growth to eradicate both poverty and solve environmental problems. The Commission's concept of sustainable development has been the one most quoted and adopted by government and international organizations, notably by the United Nations Conference on Environment and Development which was held in Rio de Janiero (UNCED, 1992). A decade later, the UN General Assembly authorized the holding of the World Summit on Sustainable Development (WSSD) because "progress in implementing sustainable development has been extremely disappointing since the 1992 Earth Summit, with poverty deepening and environmental degradation worsening" (UN Dept. of Economic & Social Affairs, 2002). The WSSD reaffirmed its commitment to sustainable development, albeit acknowledging several challenges such as deepening poverty, increasing gap between rich and poor, continuing ecological destruction, and uneven distribution of costs and benefits of globalization (United Nations, 2002).

Apart from the Commission's definition of sustainable development, there is no universally accepted definition of the concept. Rather it is left as a vague term to be defined by different parties. While some authors believe that the value of the phrase lies in its broad ambiguity (Starke, 1990; Goudzwaard & de Lange, 1995), others indicate that the term is self-contradictory and deliberately vague (Lele, 1991; O'Rirodan, 1993; Redclift, 1993; Mele, 1995). To begin with, the Commission's view of "needs" does not indicate the scope or substance of such needs, and most importantly, lacks attention to the reality that needs are invariably shaped by the interests of different societies (Redclift, 1993; Norgaad, 1994). Consequently, while North countries could be defining their needs as an affluent lifestyle, the South would view needs as the basics essentials for life. Sustainable development in that sense focuses on satisfying future needs without questioning the way the North currently satisfies its needs at other people's expense and ignores the problems of intergenerational equity between North and South (Redclift, 1993). In addition, the term 'future' itself gives no indication of a time horizon or the implications of including 'future' in policy making (Bartelmus, 1994). Moreover, the definition did not set limits to the needs to be met by the present generation, did not address the problem that some countries are living beyond their limits and have been compromising the ability of present, and future, generation in other countries to meet their basic needs.

A second criticism challenges the Commission's emphasis on economic growth as a way to both eradicate poverty and to solve environmental problems. As several analysts have argued, the Commission failed to address the fundamental contradiction between economic growth and sustainability. Seeing poverty and environmental degradation as a cause and effect of each other is a reduced view of the problem. The Commission advocated a 'blame the victim' stance rather than addressing the root causes of the problem, namely, that the economic growth policies adopted and implemented by the North which have benefited the industrialized nations while exacerbating the poverty of the South and the environment as a whole (De la Court, 1992; Graf, 1992;). In addition, mere economic growth is a 'non objective' for sustainable development as economic growth by itself leads to neither environmental sustainability nor removal of poverty (Lele, 1991). Likewise, Fien and Trainer (1993) noted that the Commission ignored the need for radical transformation of the dominant system of production.

Without a clear definition, *sustainable development* has been flexible enough to fit different agendas. Woodhouse (1992: 115), for example, outlines three different views (neo-liberal, populist and interventionist) that "must be interpreted in relation to the interest of those concerned and the manner in which they participate in the development process". The *neo-liberal* view regards the environment as natural capital. Air, water, soil and biological diversity are considered environmental assets that need to be maintained or renewed as to produce services. According to this view, sustainable development could be secured by classical economic criteria, commodifying environmental components so as to be subject to the forces and principles of the market.

The declarations of environmental movements in the South countries represent the *populist* perspective of sustainable development. In this perspective the concept is best understood in terms of "the sustainability or non-sustainability of a community". Development is seen as a process of economic, political and social change that need not necessarily involve growth" (Woodhouse: 113). It emphasizes the need for priority in development for the poorest groups within communities, or people-centered development, and is thus concerned with local needs and opposed to urban and industrial development. According to Woodhouse, international cooperation is the major concern of the *interventionist* view. It emphasizes the enforcement of international environmental agreement and treaties by international agencies. A limitation of this third view, however, is that such intervention may in reality be promoting a neo-liberal agenda (such as the role of the IMF and World Bank) (George, 1989; Rich, 1993).

Another categorization of worldviews or perspective-based disciplines (economics, ecology, and sociology) is provided by Serageldin (1993). Economists seek to maximize human welfare within the limitation of existing capital and technology. They argue that environmental economics helps to incorporate environmental and social concerns into economic decision-making (Munasingh, 1993). On the other hand, the ecologists emphasize the preservation of ecological subsystems viewing the stability of the global ecosystem as "critical". They urge for bringing into the economic decision- making process a system-wide perspective, a long-term view that underscores prevention, and a package of ecological practices that reinforces sound socioeconomic development (Rees, 1993). Cernea (1993) stresses the role of human beings as the key actors in the process of devising approaches to sustainable development. Thus, sociologists emphasize that the social components of sustainability are as important as the economic and technical one.

According to Fien (1993) and Turner (1993), there are two contrasting pathways or worldviews of environmentalism, namely the technological and eco-centric views. They adopted different ideologies and values, which are derived from the Dominant Social Paradigm (DSP) and the New Environmental Paradigm (NEP) respectively.

The technological view advocates the values of the DSP, which refers to the belief structure or ideology, has become entrenched as a result of the structure of power in society. It diffuses through society by hegemonic values, institutions and social process and, in turn, is maintained and reproduced by them (Fien, 1993). This paradigm promotes the belief of human superiority over all other creatures, and holds the assumption that nature is extremely robust with an indestructible quality and the natural resources are infinite gifts of nature to be used to produce material goods (Milbrath, 1989; Samson, 1995). It promotes capitalism and its market system urging people to produce and consume as high a rate as they can. They also encourage the use of high and hard technology on the basis that science and technology are the main catalyst for economic growth and human prosperity and the ultimate way to solve all kinds of problems.

Technological environmentalism is divided into two main strands of thought. The first is the 'cornucopian' (Fien, 1993) or the Neoclassical/modernist paradigm (Redclift, 1987). This paradigm represents a literal and honest implementation of the beliefs of the DSP. Neoclassical economists believe in the supremacy of humans over nature. Thus, nature is used as a wide variety of goods for humans' choice and use. Accordingly, development and progress are measured in terms of economic growth. In order to maximize that growth, great faith is laid on science and technology with the optimistic belief that they could overcome any emerging problems. It promotes values such as competition and consumerism rather than cooperation and conservation. Environmental problems are dismissed as external or unimportant in the pursuit of economic growth.

The second strand under this worldview includes the *light green* approach (Fien, 1993), environmental economics (Redclift, 1987; Munasingh, 1993), and shallow ecology (Naess, 1989). It extends the boundaries of the neoclassical paradigm to accommodate some environmental concerns. On the one hand, it recognizes that changes in natural capital stocks involve both costs and benefits. Thus, it reinforces the need for both efficient pricing of this capital and additional charges to cover external impacts on it. Unlike the neoclassical position, this paradigm recognizes that economic growth could cause some problems to the environment. It adopts a reformist approach rather than a transformative one towards this problem, believing that any damage done could be remedied through successful management of the environment. On the other hand, it is safe to say that environmental economics or the *light green* perspective leaves the neoclassical paradigm intact (Redclift, 1987). Economic growth is also the main objective of environmental economics. While the main accomplishment of this paradigm lies in its ability to calculate monetary values of the effects of human activities on the environment, it does not acknowledge the value of the environment and ecosystem in their own worth or their value to other groups of people. It thus reduces the environment to a commodity with a price tag on it.

On the whole, both strands, neoclassical and environmental economics, promote capitalism and the ideology of the market. They are advocated by the dominant groups in the world namely industrialized countries, international development agencies and Trans National Corporations. The techno-centric worldview, in general, serves the interests of these groups, thus works to maintain the status quo rather than challenging the power structure of the world. The primacy given to economic growth ignores other factors such as the deterioration of the environment, the exploitation of other people, extreme poverty and inequality in the world.

On the other side of the spectrum, the eco-centric worldview takes a drastically different view of the environment. It adopts the values and beliefs of the New Environmental Paradigm (NEP), which emerged to challenge the DSP. Its most important assumption is that humans, who could be considered as exceptional species, are equal members of the natural world rather than being distinct from nature and exempt from natural laws. Advocates of this paradigm value the environment for its own worth rather than its economic value. They also perceive the high levels of damage to nature as a result of actions of human beings in their pursuit of economic development. As articulated by the very useful and increasingly recognized concept of "ecological footprint" or the area of the planet supplying ecosystem resources that is annually appropriated by each person, human beings, especially those in industrialized nations and/or elite sectors, are using up environmental resources at significantly unsustainable rates (Wackernagel & Rees, 1995). Opposing the economic valuation of the environment, Mele (1995) also proposes the use of 'real' measurements such as the carbon dioxide balance and the increase or decrease in waste emissions.

Consequently, NEP advocates having less faith and more doubt about the use of science and technology in society. Having the welfare of the environment in mind, they propose 'soft' or 'appropriate' technology rather than high and hard ones (Arcury, Johnson & Schollay, 1986; Milbrath, 1989). On the whole, the NEP stresses the values of cooperation, openness and participation and calls for a new politics based on these values that could work to maximize public good. Goodland and Daly (1992) also suggest three steps toward global sustainability, namely the use of sound economics, differentiating development from growth and using environmental assessment to gauge the extent to which projects approach sustainability.

The eco-centric worldview contains a number of strands of thought. The first is known as Gaianist, dark green or the deep ecology approach. This strand lies at the opposite side of the continuum to the neoclassical economics paradigm as it firmly adheres to the values and beliefs of the NEP. The term 'Gaianist' is derived from the assumption that 'the earth is a living matter, air, oceans, and land surface form a complex system which can be seen as a single organism [Gaia: the Earth] and which have the capacity to keep our planet a fit place for life' (Lovelock, 1979: vii). Gaianists or deep ecologists have a religious-like feeling for nature and thus argue that the relationship between people and nature should be a spiritual one, and that humans should recognize their oneness with the earth. Accordingly, they warn that the ecological crisis threatens the survival of humanity and argue that the roots of the crisis lie deeply in the Western culture and in the cultural values that legitimizes the domination of nature. Naess (1973; 1988) sums up the principles of deep ecology and states that the value of non-human life forms is independent of the usefulness of the non-human world for human purposes. As a result, humans have no right to reduce the richness and diversity of the earth except to satisfy their vital needs. With this great value for non-human life, deep ecology calls for a substantial decrease in the size of human population in order to give other species a chance to flourish. Naess cautions against increasing human interference with non-human world, which leads to the worsening of the situation and states that cultural diversity is a necessity for the survival of the planet. Accordingly, a change in the present policies for one that acknowledges, respects and defends the value and interconnectedness of all things is crucial. To achieve its goals of establishing an equitable relationship between human beings and nature, deep ecology emphasizes the role of individual human beings (Braidotti et al., 1994). It promotes the need for changes in thinking and lifestyles as necessary steps towards ecological transformation of society.

The stress of deep ecology on the importance of transformation of personal values could solve part of the problem. However, this solution would not be sufficient in challenging the hegemony of the DSP power and its advocates. In addition, deep ecology stresses the role of population growth in the

South as key factor in the global destruction of nature but other causes for ecological destruction brought about by the North are not given equal attention. Another point of concern with this strand is the primacy it gives to non-human life over the lives of humans. The sole focus on them reduces the rights of humans in life and reduces their role in preserving and conserving non-human life. Finally, the dark green paradigm acknowledges the importance of social change and compassion for people everywhere and for future generations but fails to define the way to achieve it and consequently achieving social justice and equity.

The second strand within the economic worldview is the red-green or eco-socialism. It occupies a middle position between the light green and the dark-green views. Advocates of this strand believe that socialism and ecology are united. They argue that "ecology supports the socialists' case for decentralized and federally organized communities in which more harmonious relations between people would likely lead to harmonious relations with nature" (Huckle, 1988: 201). Eco-socialism views the environmental crisis as a crisis of capitalism attributing it to the primacy capitalism gives to the profit motives regardless of environmental damage (Wallis, 1992; Fien, 1993). They also equate the damage done to environment by capitalism to the exploitation of people and the emergence of different classes. However, eco-socialism advocates the integration of the eco-centric ideology in the economic growth process of society. They argue that together with ecology, socialism can remake a just society. Pepper (1993) argues that eco-socialism defines 'the environment' and environmental issues widely, to include the concerns of most people. In addition, eco-socialists claim that they recognize the political and structural dimensions of environmental issues; the links between environmental issues and human beings; and the link between environmentalism and economic and social justice.

> … the basic socialist principle – egalitarianism, eliminating capitalism and poverty, resource distribution according to need and democratic control of our lives and communities – are also basic environmental principles (Pepper, 1993: 234).

The main goal of eco-socialism is to achieve ecological change in a dialectical relationship with social change. To achieve such goal, eco-socialists argue that a transformation of social and economic structure is crucial. Such transformation would result in equal distribution of resources and power and would ensure the sustainable use of resources for present and future generations. Strategies to bring about transformation include a program for political action, international cooperation and planning to overcome the poverty and environmental exploitation, and the participation of the people (Huckle, 1988; Wallis, 1992; Fien, 1993).

With the hegemony of the capitalist ideology and the power structures governing it, the capability of these strategies to cause a social change is questionable. Eco-socialism proposes a materialist approach to social change giving great importance to economic organization and material events. In addition, the effects that socialism could have on the environment have to be revised very carefully, as historically, socialism (in its "state"-centered model) has a number of similarities with capitalism. It seeks to dominate nature, promotes growth, the use of science and technology and seeks to maximize power. Finally, this position places greater emphasis on the welfare of humans over other species, thus leaving the future of the ecosystem in danger.

A third strand of thought within the eco-centric view is eco-feminism. Eco-feminism has evolved from various social movements, notably the feminist, peace and ecology movements. The relationship between the exploitation of women and the environment has been underscored by Adams (1993), Mies and Shiva (1993), and Braidotti et al. (1994) in their assertion of the presence of critical connection of between the domination of nature and women. They see, both, women and nature as oppressed and subjugated, the victims of patriarchal power structures.

Eco-feminism, thus, aims to expose, challenge and change dominant power structure in order to transform an unjust social order. Eco-feminism criticizes other ecological and environmental movements of their negligence of women and their role in the transformation process arguing that eco-feminism is the most holistic theory and practice of liberation of, not only, women, but also, nature and all humanity (Braidotti et al., 1994). To achieve the transformation of society, eco-feminism promotes the transformation of "male" or patriarchal values, which are dominant in society. Eco-feminism argues that women's capacities such as empathy and caring and women's realization of connectedness of all things can help to develop new, better, less violent and more sustainable ways of living and social relations.

Although, eco-feminism grants women a place in the transformative process, the main question is whether the values of eco-feminism would be sufficient to reverse the dominant hierarchies. Another point of contention is that eco-feminism itself may itself lead to the reproduction of hierarchies.

The eco-centric worldview gives substantive consideration for the environment and for humans. Viewed separately, the three positions within it are, in my view, incapable of offering a comprehensive paradigm for the sustainability of humans and the environment. However, viewed together, they have the potential of deconstructing existing systems, which reproduce the structure of domination, and establishing a process of transformative politics.

Reviewing these different positions and paradigms, it becomes apparent that the WCED report, the Rio Declaration and Agenda 21 are embedded in the Dominant Social Paradigm. By their insistence on economic growth and the use of high and hard technology as the solution to world's poverty, they advocate a very weak sustainability stance. Rather than offering transformative solutions, the Brundtland Commission, the Earth Summit and the recent World Summit on Sustainable Development, have adopted a reformist approach to pressing environmental problems. Rather than challenging the power structures of the world, they gave primacy to economic growth ignoring other related (resulting) factors such as the deterioration of the environment and the exploitation of poor people in support for affluent lifestyle (mainly) in the north. They concluded that the environment could be managed to satisfy human needs and wants through minimal improvements in environmental legislation and management practices. Although the governments, multilateral agencies, TNCs, and some civil society groups attending the recent WSSD would claim that the Summit has made "significant progress" towards "achieving a global consensus and partnership among all the peoples of our planet" to implement sustainable development (UN, 2002: 2), several critical questions have been raised to challenge this claim.

For example, Jonathon Lash, President of the World Resources Institute felt that the Summit did not go far enough in setting targets for increasing the use of renewable energies. "We have missed an opportunity to increase energy production from non-polluting sources like solar, biomass, and wind, and to provide the many companies taking action to reduce emissions with a secure framework for their actions." The President of Venezuela, as Chairman of the Group of 77, argued that the generalities that been set out could be seen as retrograde. He would have preferred emphasis on human rights, such as the right to housing, health, drinking water, and life. Many small island states lamented that their efforts to promote the use of renewable energy were frustrated by TNCs who demand a quick return on their investment. An even stronger critique was offered by the NGO CorpWatch, who declared that "sustainable development is now officially meaningless" since in the Summit, "sustainable development was deemed to be whatever compromise governments happened to reach on trade, subsidies, investments and aid, and whatever projects corporations see fit to finance" (Bruno, 2002a).

In opposition to the view of WCED, De la Court (1992) proposed an alternative paradigm that offers a deeper understanding of the power structure and the economic and social systems of the world. He argues that the root cause of both poverty and environmental degradation stem from the exploitation of the South by the North, which leads to the inequality that, limits the likelihood opportunities of poor people. He suggested six principles of sustainable development: cultural and social integrity, the ecological principle, the solidarity principle, the emancipation principle, the non-violent principle and the error-friendliness principle. This paradigm suggests a shift from a very weak sustainability stance advocated by the WCED to a very strong sustainability stance - in other words, a shift from the values of Dominant Social Paradigm to those of the New Environmental Paradigm. In this regard, advocates of the NEP nowadays often prefer the concept of sustainability rather than sustainable development.

Furthermore, a holistic critique of the Dominant Social Paradigm of environmentalism needs to be contextualized within the contemporary phenomenon referred to as *globalization.* All nations and peoples now live under a "new" globalized world order driven by capitalist economics that take advantage of space- and time binding technologies for economic ends. Globalization promotes a global work place, the global shopping mall, the global financial network and the global dreams make up a new global culture (Barnet & Cavanagh, 1994). In this process, the economical and political sovereignty of nation states has been radically reduced. The power has shifted away from governments towards the Trans-National Corporations (TNCs) and other financial and economic institutions (e.g., World Trade Organization or WTO; IMF; World Bank) who with the collaboration of South and North governments, in pushing the logic of profit and growth-maximization. Promoting competitiveness and "free trade", the TNCs and International Financial Institutions (IFIs) tighten their control over markets, force local communities to compete with one another, and pay scarce attention to the effects of these strategies on widening the rich-poor gap or destroying environment (Harris, 1996; Godblatt et al., 1997; Beveridge, 1996; Brecher & Costello, 1994).

The globalization agenda represented by the expansion of the markets and legitimizing economic growth and high consumption is a major obstacle to achieving ecological, economic and social sustainability. Advocates of the process do not regard resource depletion a problem. Rather, they believe that global economic expansion will provide the wealth needed both to alleviate poverty and the look after the environment. In contrast, the New Environment Paradigm stresses the indispensability of the concept of "green justice", whereby key root causes of the ecological crisis lie in the structures and relationships of global injustice (New Internationalist, 1993). Hence, transformation towards global and local justice is integral to authentic sustainable development or sustainability, as has been highlighted in the growing social movements representing globalization from below led by civil society groups and communities such as the World Social Forum held in Porto Alegre and peoples' summits held alongside official meetings (e.g., G8; WTO; NAFTA; APEC; IMF/World Bank) (Brecher , Costello & Smith, 2002).

Clearly, the role of corporations, especially the TNCs, in globalization from above and concomitant ecological crisis must also be deconstructed in the New Environmental Paradigm. As Kerlinger (1997: 13) aptly noted:

> Given the penetrating reach as well as the penchant to dominant economics, politics and technology, it is not surprising to find the big transnationals deeply involved in most of the world's serious environmental crises. These corporations effectively play the role of Earth's brokers in the global economy – buying and selling the planet's resources and goods, as well as deciding which technologies will be developed and used, where factories will be built, which forests will be cut, minerals extracted, crops harvested, and rivers dammed. Their inordinate power puts them in the position of mediating the future of local, regional and global ecosystems in the interest of their own bottom-line and an antique version of economic growth that is wreaking havoc on the world's ecology.

In recent times, the much publicized "interest" and "concern" of corporations in sustainable development and environmentalism, expressed in the formation of SD units, showcasing environmentally sound practices, and marketing "green" lines, as well as participation in world summits, needs to be also treated with caution. As analysts like Beder (2002) have argued, corporations are adept at projecting a "spin" on their environmental concern while continuing to perpetrate assaults on the environment (e.g., pollution, depletion, degradation). Likewise, programs of "voluntary "corporate responsibility as well as collaboration with international agencies (e.g., the "global compact" with the

United Nations; WSSD partnerships) can be critiqued as attempts at "greenwashing" and avoiding accountability (CorpWatch, 1997; Kerlinger, 1997; Bruno, 2002a, 2002b).

Similarly, powerful critiques have been made of the impact of policies of the international financial institutions (IFIs) especially the IMF and the World Bank, and the World Trade Organization (WTO) on accelerating or maintaining environmental destruction. Whether through structural adjustment, debt repayment or unequal trading relationships, it is the environment that bears the burden of greater depletion, degradation and pollution (George, 1986; Kerlinger, 1997; Rich, 1993).

Another important aspect of New Environmental Paradigm thinking relates to finding alternative economic indicators to replace the orthodox indicators grounded in the assumptions and logic of the Dominant Social Paradigm (e.g., GNP, GDP). Thus, for example, a more ecologically sound definition of "progress" is the Genuine Progress Index (GPI) which takes into account resource depletion, pollution, other environmental costs, income distribution and other social factors (Halstead & Cobb, 1996; Redefining Progress, n.d.). Alternative measures of long-term environmental progress have also been proposed by Daly (1996).

Finally, a New Environmental Paradigm of sustainability needs to integrate perspectives and insights drawn from varying cultural and civilizational contexts. This insight recognizes above all the principle that values and practices of sustainability have their roots in all cultures and civilizations. Thus the idea of "sustainability" can be found in the ancient Greek vision of 'Ge' or 'Gaia' as the Goddess of the Earth, from which all things spring and to her all things that die returns" (O'Rirodan, 1993). Among indigenous, aboriginal or First Nations peoples worldwide, the wisdom of the elders has also consistently emphasized the values of living in harmony with and sacred respect of mother earth (Burger, 1990; Knudtson & Suzuki, 1992). As the "destructiveness (of our consumerist way of life) becomes increasingly apparent, more people are turning to the traditional teachings and wisdom of the First nations, hoping to learn how to live in closer harmony with nature and with the spiritual realms" (Rajotte, 1998: 4).

Turning to some of the other religions or faiths in diverse regions and civilizations, it is also clear that environmental value and wisdom are also present in the teachings and doctrines. Thus, "green" Christian theologians like Thomas Berry, Vincent Rossi, Wendell Berry and David Haenke have affirmed the key values of stewardship, ecological justice and caring for creation over the unsustainable principle of dominion over God's creatures (Regenstein, 1991; Barbour, 2000). In Islam, environmental ethics are based on the *Sharie'ah* which regulates every aspect of human life. The Quran upholds the vice-regency of human beings, whereby we are God's trustees who take care of the earth and its inhabitants (Izzi Dein, 1989; Abu Sway, 2002; Islam Set, 2002). In parallel ways, other faiths have also reminded their followers of the centrality of living peacefully, non-violently and sustainably with the environment, such as the Buddhist teaching of the eight-fold path; kindness towards animals and nature in Judaism; the Hindu belief in the unity of all creation; the Jainist commitment to non-harming of all beings; the belief of Baha'i in respect and loving kindness to every creature and nature; and the Daoist principle of yin and yang based on harmony with all beings and the cosmos (Regenstein, 1991).

In sum, the concept of sustainable development needs to be holistically and critically understood through alternative paradigms. In conducting my study on environmental education in an Egyptian university, the values, themes and issues of these paradigms will provide a useful framework for critical analysis. However, as the synthesis has shown, I find the New Environmental Paradigm to be more valid and transformative in explaining the ecological crisis and in proposing solutions for building a sustainable future.

However, in order to make a paradigm shift to sustainability, education has to play a fundamental role in making the choice for a sustainable global-planetary habitat over and against the pathos of the global competitive market place. The role of teachers and teacher educators has been stressed to counter the process of globalization from above (Bacchus, 1996; Beveridge, 1996; Harris, 1996). Teachers should help their students to think and act critically, to challenge the root causes of global problems; to engage them in the critical exploration of the expansionist economics of development a'la modernization and the discourses framing these problems. Educators should also be able to make links among ecological issues, the community and the economy and support development of community-based knowledge and research and the use of knowledge to support community values. Teacher educators should also try to develop in their students a sense of cultural and national identity. This is crucial as corporate-led globalization trivializes what is small, particular, indigenous and local. Thus, "think globally, act locally" needs to be extended to the "think locally" to preserve the environment and culture.

In short, educators and teacher educators have a crucial role in promoting the critical examination of globalization and its underlying worldview, exploring alternate visions and developing learning strategies for rebuilding a world that is sustainable in both ecological and human terms. However, as the next section elaborates, as in the case of concepts like environmentalism and sustainable development, it is also essential to examine and deconstruct alternative paradigms of environmental education.

Environmental Education

Environmental education made its initial appearance on the formal education scene in the late 1960s. Since that time, its role in promoting and improving the capacity of people to address pressing environmental issues has been continually stressed through different intergovernmental conferences. Thus, Principle 19 declared at the United Nations Conference on the Human Environment, held in Stockholm 1972, stated that "Education in environmental matters for the younger generations as well as adults giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individual, enterprises and communities in protecting and improving the environment in its full human dimension" (UN Conference on Human Environment, 1972). This was followed in 1975 with the Declaration of the Belgrade Charter at a meeting organized by the new United Nations Environment Program. The Charter stressed that "environmental education demands global thinking and local action" and should focus on the "relationship between man and the biosphere" (Schleicher, 1989: 266).

The first Intergovernmental Conference on Environmental Education held in Tblisi in 1977 declared that "environmental education is a continuous and life long process where individuals and society become aware of the environment and develop knowledge, values, skills, experiences and action orientation to be able to solve present and future problems. Furthermore, (it) must consider the economic, social, and ecological realities of each society" (Lindhe, 1999: 19). Specifically, the Tblisi Conference articulated the following objectives for environmental education:

> 1. To foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas;
> 2. To provide each person with opportunities to acquire the knowledge, values, commitments and skills needed to protect and improve the environment;
> 3. To create new patterns of behavior of individuals, groups and society as whole towards the environment. (UNESCO-UNEP, 1978: 3).

These objectives were reaffirmed at the Tblisi Plus Ten Conference held in Moscow in 1987 (UNESCO-UNEP, 1988) while the Brundtland Commission emphasized that "the world's teachers has a crucial role to play in helping to bring about the extensive social changes needed for socially and ecologically sustainable patterns of development" (WCED, 1987: XIV). In 1990, the influential World Conservation Strategy called Caring for the Earth: a Strategy for Sustainable Living emphasized the need to educate for knowledge and attitudes that lead to sustainable way of living. (IUCN, UNEP, WWF, 1990). In 1992, the Rio Summit produced Agenda21, in which environmental education was centrally endorsed. As Chapter 36 states:

> … education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. While basic education provides the underpinning for any environmental and development education, the latter needs to be incorporated as an essential part of learning. Both formal and non-formal education is indispensable to changing people's attitudes so that they have the capacity to assess and address the sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviors consistent with sustainable development and for effective public participation in decision making. To be effective, environment and development education should deal with the dynamics of both the physical/biological and socioeconomic environment and human (which may include spiritual) development, should be integrated in all disciplines, and should employ formal and non formal methods and effective means of communication (UN-UNEP, 1992).

At the 1997 International Conference on Environment and Society: Education and Public Awareness for Sustainability held in Thessaloniki, Greece, delegates reiterated the essential role of education (formal, non formal, life long learning, teacher training, high education in promoting sustainability) (UNESCO, 1997). Most recently, the World Summit on Sustainable Development in Johannesburg affirmed in its Plan of Implementation the critical role of education in promoting sustainable development. Under Chapter X: Means of Implementation, the plan advocates for the need to:

> 121. Integrate sustainable development into education systems at all levels of education in order to promote education as a key agent to change.
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> 122. Develop, implement, monitor and review education action plans and programs at the national, subnational, and local levels as appropriate that reflect the Dakkar Framework for Action on Education for All and that are relevant to local conditions and needs leading achievement of community development and make education for sustainable development a part of those plans.
>
> 123. Provide all community members with a wide range of formal and non formal continuing educational opportunities, including volunteer community service programs, in order to end illiteracy and emphasize the

> importance of life long learning and promote sustainable development (United Nations, 2002: 61-62).

Speaking at the Opening Session of the Education Sector Symposium of the WSSD, UNESCO's Director General Koichiro Matsuura (2202: 3) stated that:

> Educating for a sustainable future is a formidable challenge.... The new vision of education for a sustainable future places education at the heart of the quest to solve the problems threatening our future. Education in all its forms and at all levels- is not only an end itself but is also one of the most powerful instruments for bringing about the changes required to achieve sustainable development....This vision of education emphasizes a holistic interdisciplinary knowledge to develop the knowledge and skills needed for a sustainable future as well as the necessary changes in values, behavior and lifestyles.

Significantly, the WSSD Plan of Implementation also recommends (Section 124d) that the United Nations General Assembly consider adopting a decade of education for sustainable development starting in 2005 (United Nations, 2002: 62).

In sum, over the past three decades, a strong consensus has emerged among governments, international and national agencies, policy-makers and educators of the central role of education in promoting environmental care and sustainable development.

Clearly, environmental education is deemed as important in the change of values, attitudes and behaviors necessary in bringing about a shift to a new way of life sensitive to environmental problems and capable of resolving the ecological crisis. This will also necessitate a redefinition of people's relationship with the biosphere as well as with other humans. Accordingly, environmental education must promote an understanding for our ecological predicament. An awareness of the present environmental problems and their root causes could bring about the need to participate in their solution. In addition, in this phase of globalization we are living in, environmental education has to be tuned to the interconnectedness between the parts of the whole global system. Problems should be viewed holistically and in relation to each other with respect given to ecosystems, people and their culture. Environmental education thus echoes the principles of holism and interconnectedness. Nonetheless, while there may be general agreement on goals and purposes, as reflected in the international documents summarized above, the existence of alternative paradigms of environmental education needs to be recognized.

However, before elaborating on these paradigms, it is also important not to view environmental education in isolation from parallel and/or complementary initiatives in transformative education. In this regard, there is growing dialogue and collaboration between environmental educators and advocates for the broad, multidimensional field called peace education or in some contexts, global education. A central theme in peace/global education is the profound inter-relatedness and interdependence of all parts of the earth, including humanity, and the problems resulting from human activities. Thus, it has been an ambitious movement to widen the learning lens and move beyond the single discipline and nation-centered approach to education to viewing the complex political, economic, social, cultural and ecological milieu in which the people and nations of the world interact. As one of the pioneering peace educators, Betty Reardon (1988: xxi) noted, "it comprehends all that is relevant ... and relates to all human interactions on Planet Earth and human interactions with the Earth". Other peace/global educators have also emphasized that educating for a culture of peace necessarily encompasses the inter-related themes of educating for nonviolence, disarmament, local/global justice, human rights, cultural solidarity, environmental care and personal peace (Hicks, 1988; Haavelsrud, 1991; Selby, 1993; UNESCO, 1995; Burns & Aspeslagh, 1996; Smith & Carson, 1998; Toh & Cawagas, 2000).

Peace/global education has an organic link with environmental education, development and human rights education based on their explicit emphasis on values (Reardon, 1988). Environmental education emphasizes on the value of preserving the ecosystem, development education is based on the values of promoting the quality of life of all people, and human rights education advocates the values of respecting the dignity and freedom of human beings. All these disciplines positively reflect the concern of peace/global education to "confront values conflicts and call for value analysis at both personal and structural levels" (Reardon, 1988: 32). Therefore, peace/global education is an attempt to respond to personal, local and global problems and to find ways of creating more just and sustainable futures. In the same light, the environment, development, human rights and peace are issues of global survival that have to be viewed holistically and in relation to each other and to be addressed by education in a comprehensive manner. Reardon, (1988: 5) conceptualizes it as "education of the whole person". She argues that this kind of 'wholeness' would require education to give careful consideration of the interrelationships and integration of all levels of social organization and the natural environment as the context for the development of the human person. Integrity, in this context, should be grouped in three core values of peace/global education: *planetary stewardship*, global *citizenship*, and *human relationship.* The value of *planetary stewardship* would foster in students a consciousness of their relationship to the whole natural order and their responsibility to assure the health, the survival and the integrity of the planet. The value of *global citizenship* considers the capability of students to act: to create a nonviolent, just social order on the planet; a global civic order offering equity to all the people; protecting universal human rights; and assuring respect for the planet that produces the life and well being of people. Finally, the value of *human relationships* is the one that recognizes the interconnections and interrelationship that make up the web of life. Similarly, the well-known British peace educator, David Hicks (1988: 15) includes ecological concern in his list of key attitudes to be developed in educating for peace. This means "students should have a sense of respect for the natural environment and our overall place in the web of life. They should also have a sense of responsibility for both the local and global environment". Drawing on their work in peace education in the Philippines and other contexts, Toh and Cawagas (2000:370) emphasize the value of "caring for the seven generations", which "reminds us of the profound wisdom of indigenous teachings on the importance of living in peace with Mother Earth, and hence of the need for development that promotes sustainability, not environmental destruction".

It is also important at this point to differentiate between the two alternative paradigms in peace/ global education which are based on different political and social assumptions and conceptualizations: the liberal-technocratic paradigm, and the transformative paradigm (Toh, 1993). In critique of the liberal-technocratic paradigm, Toh cautions against its "philosophical orientation of liberal appreciation for the culture of others", arguing that it shows outward manifestation of feelings of solidarity towards other cultures but with paternalistic undertones. Global interdependence in this paradigm masks a hierarchical relationship between nations and or regions. From this perspective, the notion of interdependence is a one way direction in which interrelationships are judged according to the rules of the dominating power (for example, North over South). In addition, progress is viewed as unlimited in material and consumerists' terms and prevailing crises of interdependence such as environmental problems are deemed manageable and recoverable through technological solutions. On the other hand, the transformative paradigm redirects the course of global education to include principles of justice, sharing and solidarity within the global community. It seeks to transform values and practices from the perspective of competition, mastery over nature, the primacy of technical efficiency, authoritarianism and dogmatism to cooperation, living in harmony with nature, consideration of social justice and equity, and culture solidarity. The transformative paradigm encourages students to develop, not only, a critical understanding of the realities of the crises that exist in societies in a holistic way, but a commitment and personal responsibility to create alternative futures based on the principles of peace, justice and compassion. According to this paradigm, to be 'global' is to be willing and able to analyze, understand and accept the need for social justice from a global perspective.

Looking at environmental education through the lenses of the transformative paradigm, it becomes apparent that it faces two challenges (Robottom cited in Fien, 1993). The first resides in the counter-hegemonic goal of education in challenging the "business as usual" approach and changing the social values and structures that support it. The second challenge involves the discovery of professional development experience and processes that can conscientize environmental educators to the transformative nature of the field and empower them to be active, critically reflective professionals.

As Fien (1990, 1993) has suggested, three approaches to environmental education and their ideological bases can be identified, namely education *about* the environment, education *through* or *in* the environment and education *for* the environment. Education *about* the environment is the most common form of environmental education. Its goals are derived from the neo-classical and "light green" paradigm and it promotes the ideology of the Dominant Social Paradigm. Education *about* the environment emphasizes teaching facts, concepts and generalizations about the environmental patterns, processes and problems. The content concentrates on natural sciences rather than the social sciences. It promotes the belief in the rights of humans to control nature and focuses on the technical solutions to environmental problems and disregards the human factors involved in their causes and solutions. Education about the environment is inefficient in dealing with global ecological issues. It acts as an "agency of social reproduction and does not help students to understand how societies and their environments are made and re-made" (Huckle, 1985: 302). There is also an over emphasis on description rather than explanation in the content; interpretation than problem solving, and educational success is defined in terms of the student's abilities to reproduce the ideas, skills and attitudes that support the status quo (p.293). Similarly, in their study of environmental attitudes of a sample of Australians, Pooley and O'Connor (2000: 711) concluded that for "environmental educators interested in changing environmental attitudes, emotions and belief rather than knowledge, need to be targeted as sources of information on which to base their environmental programs". According to Bradley, Waliczek and Zajicek (1997), the emphasis on basic knowledge of ecological principles (cf. education *about* the environment) neglects value formation and the development of analytical skills leading to environmentally conscious behavior.

Education *through* or *in* the environment is a learner-centered approach to environmental education. It focuses on increasing the awareness and concerns of students of their environment by linking learning to their experience in the environment (Fien, 1990). It is designed to make learning experiences realistic, relevant and practical. As Orr (2003: 4) puts it,

> ... courses taught as lecture courses tend to induce passivity. Indoor courses create the illusion that learning only occurs inside four walls, isolated from what students call, without apparent irony, the "real world." Campus architecture is crystallized pedagogy that often reinforces passivity, monologue, domination and artificiality.

As environmental education has become more popular in especially North educational contexts, the curriculum nowadays often include "outdoor" experiences in which the students interact with nature (e.g., field trips, out door studies, nature areas) (e.g., Powell, 1987; Pollard & Pedler, 1989; Neal & Palmer, 1999).

However, as Fien (1993) has argued, the role that education *through* the environment plays in challenging the causes of environmental problems is minimal. It seeks to develop a deeper understanding about the environment but is rarely concerned with interventionist approaches leading to action and movements for transformation.

In contrast, the third paradigm, education *for* the environment, sees the process of transformation as essential. As Fien (1990: 34) has synthesized:

> Reflection on the relative strengths and weaknesses of these three approaches to environmental education in relation to the values transformation necessary to promote sustainable and socially just lifestyle choices, has led most leading environmental educators (Lucas, 1979; Hungerford, Peyton and Wilke, 1980; Huckle, 1983; Maher, 1985, 1986; Robottom, 1984; Fien, 1988; Greenall Gough, 1990) to argue that it is only when the real intention is education *for* the environment that real environmental education is actually taking place. Such writers argue that education *in* and *about* the environment are valuable only insofar as they are used to provide skills and knowledge to support education *for* the environment.

In his overview, Fien (1993) noted that education *for* the environment is underpinned by the principle of eco-socialism. It is also based on the premise that education is not neutral. Rather, it is viewed as a critical approach that seeks to contribute to the process of social change through educational activities. Its objective is to engage students in exploring and resolving environmental issues to foster the values of the New Environmental Paradigm. It promotes, in addition to preserving the environment, social justice, equality and democracy. It also helps students develop critical thinking skills for deconstructing simplistic explanations, which blame the individual or nature for environmental problems. In doing so, it builds on education *about* the environment and education *through* or *in* the environment to help students become informed, sensitive, responsible and competent participants in environmental protection and improvement. Education *for* the environment is likely to operate where the values of the dominant social paradigm and hegemonic and where the hidden curricula have a strong power. It is unclear whether education for the environment would be able to counter the action and power of such agenda. However, education *for* the environment promotes a transformative form of education that challenges the status quo and offers a critical understanding of environmental problems. In his ongoing work, Fien (1995; 2000) has emphasized the complementary term of *education for sustainability* which is premised on similar principles of education *for* the environment, as shown in this definition:

> Education for sustainability is a new paradigm for a life long learning process that leads to an informed and involved citizenry having the creative problem solving skills, scientific, technological, and social literacy and commitment to engage in responsible actions that will help ensure an environmentally sound, socially just, and economically prosperous future for all. (Fien & Maclean, 2000).

Furthermore, as seen in the literature over the past 2 decades, a range of criticisms of education *about* and/or *in* the environment have also been made. Different critiques of existing environmental education argue that most of it is embedded in the liberal technocratic paradigm of education seeking technological solutions to environmental problems. Also, it tends to view interdependence as a unidirectional transfer of knowledge and technology to the South. It usually examines environmental problems in superficial ways rather than exploring their root causes and stressing knowledge and awareness rather than action in addressing the problems.

Suzuki (1989), for example, criticizes education for alienating children from nature, socially conditioning them and repressing their curiosity and interest in the environment. Contending that education has only contributed to the students' ignorance of their interconnectedness with all living things and of their place in the web of life, he calls for a re-examination of the content and methodologies of all education to promote values and principles of sustainability. On a more optimistic level, Disinger (1985; 1990) and Greenall (1986) see environmental education as having both positive and negative effects. It has been effective in teaching about generalized ecological processes, symptoms of environmental damage and environmental hazards and technical repair strategies. However, environmental education has not progressed to the point of exposing the root causes of environmental problems or to targeting possible solutions and it has emphasized knowledge and awareness scarcely addressing personal values and attitudes towards the environment.

Gigliotti (1993; 1994) likewise argued that environmental education has been successful in producing ecologically concerned citizens who, however, are not willing to change their attitudes or their value system. He then, calls for a redefinition of the content of environmental education with more emphasis to be put on the connections between today's lifestyle and environmental problems. In addition, the specific desired behavior in favor of the environment must be a part of the message and the benefits from the adoption of the new behavior should also be specified. In his analysis of the literature on environmental education, Iozzi (1989a; 1989b) suggested that the key entry point for environmental education is to first obtain positive environmental attitudes before dealing with the cognitive domain. Thus, cognitive and effective factors should be considered holistically in the teaching-learning process of environmental education. In his approach he suggests that greater emphasis on the affective domain would lead to achieving great success in the cognitive domain, an argument that has been supported by a recent study by Pooley and O'Connor (2000).

Problems of environmental education in the South have also been addressed. Batanouny (1990) cautions that environmental education in the South is confronted by many problems, which minimize its effectiveness and ability to reach its goals. Moreover, in part due to a continuing dependency of South regions on educational innovations from North, concepts, methodologies and technologies of environmental education may be adopted without taking into account the realities of South contexts. The success of environmental education in the South is also hindered by the lack of scientific information about the environment and its problems. Thus, course planners and teachers are often left with no basic data to use in their courses. He warns that programs of environmental education in the South will continue to be ineffective until other problems of poverty, justice, inequality and social problems are dealt with.

Concoran and Severs (1994) state that the field of environmental education needs new intellectual, emotional, and spiritual energy to keep pace with the devastating urgency of environmental problems. They see a necessity for broadening the definition of the environmental educator and for the creation of methods more powerful in their ability to cause change. Thus, environmental education has to be embraced by a number of philosophical perspectives. First, it has to be expanded by deep ecology, which confronts the mechanistic scientific paradigm and allows students to interact and connect as part of nature's dynamic community. Second, environmental education should be informed by the perspectives of conservation biology, which offers educators a basis for expressing the inter-relatedness of the natural world. Third, it should be put in context through bioregionalism, which brings the environmental education a profound respect for place, respect for the community in that place, and understanding of interdependence. Fourth, it should be enriched by eco-feminism. Students should be encouraged to challenge traditional male thinking and bring in an understanding of the deeper implications for nature and society, of the dominant male-centered culture and how attending to the rights of women and responding to the health of nature combine actively at the level of the individual. Finally, environmental education should be expanded and critiqued through socially critical analysis; it should employ skills of social critique to challenge the ideology that generates environmental problems in a political economy. Although the expansion of environmental education to include different philosophical perspectives has enormous potential for strengthening its theory and improving practice, it still is limited to the cognitive domain rather than the domain of action.

In his discussion of the need to establish an 'Earth-centered' education Orr (1992) describes it to be an opposite of the specialization and narrowness characteristic of most education. "Such education can help in founding ecological literate people who have the knowledge necessary to comprehend interrelatedness of an attitude of care and stewardship". He identifies six of its foundations. First, all education is environmental education. Students should learn that they are a part of or a part from the natural world by what is included or excluded, emphasized or ignored in their education. Second, environmental issues are complex and cannot be understood through a single discipline or department. He calls for reshaping of institutions to function as trans-disciplinary laboratories enhancing the study of interactions across different disciplines. Third, for the inhabitants, education occurs in part as a dialogue with a place and has the characteristics of good conversation. In a conversation, people acknowledge the existence and interests of others. Hence, education should help students see themselves, not in isolation from, but in relation to others. Fourth, the way education occurs is as important as its content. A change in the way of teaching is crucial. Teachers should be facilitators to the process of real learning that is participatory and experiential. Fifth, experience in the natural world is both an essential part of understanding the environment and conducive to good thinking. Understanding nature demands a disciplined and observant intellect, and experience trains the intellect to observe carefully. Sixth, education relevant to the challenge of building a sustainable society will enhance the learner's competence with natural systems. Practical competence is seen as an indispensable source of good thinking and good thinking proceeds from the convergence of reflective thought and real problems.

To make environmental education effective in promoting environmental understanding, social and environmental values and attitudes, there is a need for a new ecological ethic (Schleicher, 1989; Rashty, 1992; Bonnett, 1999). This ecological ethic would give rise to fundamental changes in dominant human values, attitudes and behavior toward the environment. It would demand the exploration of values that underlie environmental degradation. In other words, it demands increasing awareness that human norms, aspirations and partial competencies are the major causes of the environmental crisis. In addition, an ecologically oriented value system, with a set of ethical principles has to replace the traditional system that is economically oriented in order to direct proper environmental action. Such ethics embody the principles of the transformative paradigm. Similarly, at a UNESCO seminar on the Responsibility of the University towards the Natural and Cultural Environment in Budapest in 1983, Emmelin (1986) argued for the adoption of an environmental ethic as a primary goal of environmental education. The key principles and concepts of such a global environmental ethic include the interdependence of all-living things, respect for nature, holism, respect for future generations, sustainable development and self-reliance and participation (pp.60-61). For Mische (1999), an ethic of ecological responsibility is crucial. In her words,

> ... the needed learning must go much deeper than simply superimposing facts about the environment on top of existing paradigms and world views. If we are to find long-lasting solutions to environmental crisis we need to get at the unconscious thought structures, ideologies, and world views which guide out harmful choices and behavior and learn to re-inhabit the Earth in deepened consciousness and attunement to the life of the Earth and out common dependency on, and shared responsibility for, her functional integrity (p. 2).

As a leading agency in promoting education for sustainable development, and a sustainable future, UNESCO (1997: 32) similarly stresses that

> Ethical values are the principle value in social cohesion and, at the same time the most effective agent of change and transformation. Achieving sustainability will depend on changes in behavior and lifestyles... which will be motivated by a shift in values and rooted

> in the cultural and moral precepts upon which behavior is predicated.... Education in the broader sense will by necessity play a pivotal role in bringing about the deep change required ...

Globally a growing number of educators across grassroots communities, NGOs, institutions and other civil society groups has also promoted development and implemented an educational program based on the Earth Charter which advocates a holistic and global ethic for a more sustainable way of living. As summarized by Mackey (2002:84) the Earth Charter can be used to achieve three educational objectives namely consciousness raising "to motivate people to act in more environmentally and socially responsible ways"; application of values and principles; and the call for action to promote justice, sustainability and peace.

The paradigmatic shift in environmental education and education for sustainable development towards education for the environment, education for sustainable futures and education for sustainability, as reviewed above, cannot proceed effectively, however, unless supported by complementary changes in teacher education. As UNESCO-UNEP (1990) has stressed, the preparation of teachers is "the priority of priorities." Matsuura (2202: 1) affirmed that

> ... teachers are the key to successful education for sustainable development. There are over 60 million teachers in the world and every one of them is a key agent for bringing about the changes in values, attitudes, behavior and lifestyles we need. For this reason innovative teacher education is an important part of educating for a sustainable future.

Fien & Maclean (2000: 38) likewise, noted that "a special commitment from teacher education institutions is necessary to reorient teacher education towards sustainability. This is because education for sustainability requires a new focus and outlook within education which prospective teachers and teacher educators may not have experienced in their own education." Through an action research network approach to professional development involving many environmental educators in nearly twenty Asia-Pacific countries, they demonstrated how teacher educators can collaboratively enhance and deepen their knowledge, teaching-learning methodologies and commitment to education for sustainability.

Last but not least, education for sustainability calls for an appropriate pedagogical strategy. Thus in the field of teacher education, Fien and Maclean (2000) in the study discussed above, as well as Fien and Rawling (1995) have demonstrated the importance of the reflection-in-action model of teacher education, whereby "teachers (and teacher educators) monitor and evaluate their own practice reflexively" (Hart, 1990: 14). More generally, as many educators for peace and other transformative themes have emphasized, the pedagogy of education for sustainability has to be consistent with the principles of the transformative paradigm. As Hicks (1988) puts it, "a close relationship needs to exist between ends and means, content and form" (p.17). He urges for an approach to education that is "both deconstructionist ... and person-centered," arguing that education has a role to play in the transformation of society... and (that) the development of a centered and assertive self-reliance in the individual is a pre-requisite for this" (p. 245).

A transformative pedagogy of education implies less hierarchical classrooms, with students moving from passive recipients of a fixed body of knowledge towards challenging and questioning the form and content of the education process. It therefore promotes the themes of "empowerment and transformation" which underpin critical pedagogy which views school as a site of awakening in which teachers and students engage in the critical and empowering learning and teaching process for building a more just and equal society. Thus, employing a critical pedagogy, students will be aware of the principal arguments and perspectives, which bear on environmental issues. Through critical thinking they will be able to make sound judgments and critically develop a holistic view of the world and move to act on what they learned. The pedagogy is, thus, "conscientizing and empowering", and "move not just the mind, but also touch the heart" (Toh, 1993).

The educational process should help students go beyond the problems and help discover their root causes. The process of self-empowerment is a sense of self-reliant commitment or a will to participate actively in the transformation of communities, institutions and structures at the local, regional, national, or global levels that result from the process of conscientization. Freire (1970; 1985) points out the importance and the need for teachers to engage in the transformative teaching process in which both the teachers and the students are changed from within by combining part personal experiences with positive goals. The process of teaching/learning becomes dialogue based and instead of being an educator, the teacher becomes an "edu-learner" (Reardon, 1988) and gets the chance to learn as well in the process of transformation. Selby (1993) comments that educators should be facilitators of interaction, explorers of values, perspectives and assumptions held by each student and learning situations that nurture the imagination, emotions and intuitions of students as well as their cognitive capabilities. Teachers should promote dialogue, negotiation, consensus seeking, and sharing of perspectives and decision-making. In summary, a transformative pedagogy should be cooperative, democratic, interdisciplinary and experiential in which the process of education becomes a four-fold chain: Knowledge-Empowerment-Transformation-Action (Hicks, 1988). Only then, will education for sustainability help students make the shift from the values of the Dominant Social Paradigm to the values of the New Environmental Paradigm. In this regard, there is a growing of creative and critical teaching learning or teacher education resources available for education for sustainability such as UNESCO's CD-ROM Teaching and Learning for a Sustainable Future (2001), and various handbooks, manuals, case studies and web sites (Greig, Pike & Selby, 1989; Randle; 1989; Kastenholz & Erdmann, 1994; Reardon & Nordland, 1994; Selby, 1995; Smith & Williams, 1999; Pike & Selby, 2000; de Mello & Zuber, 2002; Green Teacher, n.d.; Green Map System, n.d.; UNESCO Education for Sustainable Development, n.d.; The Earth Charter Handbook; n.d.)

A final pertinent reflection on a critical and transformative pedagogy for education for sustainability focuses on critics who have characterized such pedagogy as "indoctrination" (e.g., Jikling & Spork, 1998). As Fien (2000:5) has cogently responded, such criticisms constitute "an attempt to control the influence of critical and environmental education through the power/knowledge of liberal educational environmental discourses." On the contrary, a critical pedagogy of education for the environment provides a professional ethical way of teaching that includes safeguards against indoctrination.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter describes the research methodology used to explore with the participants their meanings and interpretation of environmental education in the context of the Faculty of Education at Heliopolis University as well as a critical examination of their practice. Grounded in a qualitative orientation, the study also includes a component of action research. The chapter also describes the research site, the selection of the research participants and the research methods used to collect data. These methods include conversations, in-depth interviews, participant observation, survey questionnaire, content analysis of select text books and document analysis. It also presents how data will be analyzed and the criteria for truthfulness and trustworthiness of the data. Ethical considerations that guided the conduct of the study are also included in this chapter.

Qualitative Research Orientation

This study is based on a qualitative research orientation as this is deemed most relevant to the research problem and questions under study, which focuses centrally on the understanding, meanings and interpretations of Egyptian educators in regard to their theory and practice of environmental education. As Taylor (1993: 173) noted, the strengths of the qualitative research are that

> …it provides methods to challenge the myths of the ultimate truth, objectivity, the perfect method, scientific supremacy, empirical evidence, higher authority and significance. Qualitative methods allow exploration of humans by humans in ways which acknowledge the value of all evidence, the inevitability and worth of subjectivity, the value of a holistic view, the integration of all patterns of knowing, the limitations of empirical evidence in

relation to studying humans, the value of ethical considerations and the limitations of the meanings of statistical significance.

In the study, I have undertaken the use of qualitative research strategies which enabled me and the participants to critically explore how they develop their understanding of the world and how an individual or a group interprets subjective experiences and develops meanings (Filstead, 1977). Individuals are considered active agents who define the nature of reality for themselves and the meaning that it generates through interaction and contacts with respective objects and people (Neuman, 1991; Palys, 1997). Thus, the qualitative methodology emphasizes the subject's viewpoint in order to understand interaction, process, and social change. As Filstead (1977: 34) also emphasized, "the qualitative paradigm perceives social life as a shared creativity of individuals. It is this sharedness which produces a reality perceived to be objective, extant and knowable to all participants in all social interaction". Furthermore, qualitative research is relevant to this study since it enables me to understand what lies behind "the complexity, the contradictions and the sensibility of social interaction" (Glesne and Peshkin, 1992: 6)

Methodologically this study eschews the positivist and post-positivist paradigms of research in which knowledge is viewed as independent of the researcher and social context (Mishler, 1979; Fien & Hillcoat, 1996; Heron & Reason, 2001). The researcher "manipulates and observes in a dispassionate, objective manner using primarily quantitative techniques" (Mertens, 1998:8); and research is aimed at finding "objective generalizable knowledge" and seeks a "separation of 'facts' from 'values'" (Wellington, 2000: 17). In contrast, the research methodology adopted falls within both the interpretive/constructivist and emancipatory paradigms. As Mertens (1998: 11-14), noted the interpretive/constructivist researcher seeks to understand multiple socially constructed realities, acknowledges the interaction between researcher and participants and makes explicit values embedded in social reality and individual meanings. Furthermore, my study also draws upon some principles of the emancipatory paradigm, which recognizes that the multiple realities of individual participants are situated in complex political, economic, historical, social and cultural context, and seeks to catalyze personal and social transformation (Shymansky & Kyle, 1992: 755-756; Robottom & Hart, 1993: 594-596; Mertens, 1998: 15-21).

Consistent with the principles of a qualitative research orientation as well as the interpretive/constructivist and emancipatory paradigms, a range of qualitative data collection methods was employed in the study. However, prior to elaborating on the specific methods including conversations, in-depth interviews, participant observation and document analysis, it is also pertinent to clarify the methodology known as action research since one component of the study draws on the insights and strategies of action research at Heliopolis University. In this phase of the research, I worked with a sub-group of my sample of participant teachers while they questioned and articulated the rationale of the practice of environmental education in order to observe and improve their practice through an action–reflection process.

Action Research

Action research is increasingly becoming employed as a methodology in different sites, communities and formal institutions. The idea of action research was initially developed by the social psychologist Kurt Lewin. He employed it in investigating social practices like production in factories, discrimination against minority groups, or habits of food buying in the middle 1940s. According to Lewin, action research consists of analysis, fact-finding and conceptualization about problems, planning of action programs, executing them, and then more fact-finding or evaluation. This is followed by a repetition of this whole circle of activities; a spiral of such circles (Carr & Kemmis, 1986). Ever since its formulation by Lewin, action research has become increasingly popular for its rationale of the "study of a social situation with a view to improving the quality of action within it" (Elliott, 1991: 69). Lewin's spiral made a connection between research and practice within a specific context with the goal of improvement of that practice. It has been defined as a "combination of both action and research. It is an attempt to understand our educational practice in a more complete way in order that we may act in ways that may bring about both improvement and understanding" (Carson et al., 1989: 2). Its main aim is to "...support teachers, and groups of teachers, in coping with the challenges and problems of practice and carrying through innovations in a reflective way" (Altrichter, Posch, and Somekh, 1993: 4).

Action research consists of four phases: planning, action, observation and reflection that are repeated in a cycle (Carson et al, 1989: 3). Planning is the phase in which participants question the realities of their particular practice, and begin to search for what ought to be. They implement the plan they have developed in the Action phase. Observation is simultaneous with action and is important for subsequent reflection and action. Reflection is the fourth phase in which participants reflect upon what they learn from the process of planning, acting, and observing. By the end of a number of cycles of action research, participants would be able to achieve marked differences in their practice, which they could report as improvements. While this cyclical process is central to conducting an action research, its main importance lies in the reflective action or the reflection-in-action process (Schon, 1983). Both Stenhouse (1975) and Elliot (1979) stress the importance of teachers addressing the everyday problems that they experience and through an action research process, resolve those problems and improve their school contexts. In the field of teacher education, Schubert and Schubert (1984) consider action research as a meaningful approach that encourages and promotes practical and reflective enquiry: "... the most meaningful image of action research derived from our teaching is a continuous, conscious attempt to seek increased meaning and direction in our lives with students, and our own personal lives."

It is important to note, however, that action research can be undertaken based on alternative paradigms. Thus Grundy (1982) and Carr and Kemmis (1986) have conceptualized three modes of action research: technical (emphasizing technical skills to produce more efficient outcomes); practical (seeking to improve practice through the practical judgment or wisdom of practitioners as individuals); and emancipatory (collaborative critical reflection and theorizing for transformation of selves and institutional structures). Initially, much of action research in education has tended to reflect the technical and practical paradigms. However, increasingly, in various fields such as teacher education, adult education, social education, geographical education and environmental education, there is now a growing pool of research based on the emancipatory paradigm (e.g., Robottom, 1985; Smyth, 1987; Tripp, 1990; McTaggart, 1991; Hillcoat, 1992; Fien & Rawling, 1996; Stapp, Wals & Stankorb, 1996). In sum, as Kemmis (1985: 39) puts it,

> Emancipatory Action research is a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of (a) their own social and or educational practices, (b) their understanding of these practices, and (c) the situations in which the practices are carried out.

In this regard, emancipatory action research is also parallel in principles and values to the movement referred to as participatory action research (PAR) in South contexts (Hall & Kassam, 1985; Duke, 1985; Latapi, 1986, Fals-Borda & Rahman, 1991). PAR draws especially on the influential ideas and praxis of the Brazilian adult educator Paulo Freire (1970, 1985, 1988), whose vision of critical education is based on dialogue and conscientization leading marginalized peoples to critically understand their realities and then to transform those realities towards justice and emancipation. In many South contexts, PAR has emerged as an inspirational strategy whereby ordinary people are able to promote grassroots development based on justice, self-reliance and sustainability (Rahman, 1993). As Torres (1995, 244-246) has usefully summarized, PAR is guided by multiple elements such as:

> ....(PAR) starts from social and political intentionality which is explicit and articulated in solidarity and dominated and poor classes and groups of the society... assumes a combination of research processes that includes popular participation ... the constitution of education and research activities in a socially organized based or group constitute a *sine qua non* condition of PAR ... assumes an understanding of knowledge as an instrument

> of social transformation ... sponsoring of a systematic movement of consciousness raising... PAR deals with political – pedagogical proposals that are born out of social struggles... (and) deals with pedagogical actions that are inscribed in the process of social, political and economic defense of the rights of the poor.

In the context of the research methodology of my study, I endeavored to locate the action research component within the emancipatory paradigm based on my experience in Egyptian higher education; I felt an urgent need for transformation. However, in the action research process, I was careful not to impose my conviction on the participants, as this would contradict the principles of dialogue and collaboration, and "empowerment" as a self-reliant process on the part of the participants. As the research unfolded, I became aware of many personal and institutional-structural barriers to the institutionalization of an emancipatory paradigm, albeit they are not insurmountable, and on occasion, the outcome may reflect more of the practical paradigm.

Furthermore, it is important to acknowledge that while the relatively short duration of the data-collection phase of the study did not allow for a full-fledged action research project, its principles and strategies were most appropriate for the purpose of the research. For example, engaging with the participants in the cycle of planning was beneficial in exploring their meanings, interpretations, assumptions, problems and constraints and concerns in teaching of environmental education. Observing and reflecting with them on the outcome and results of the action was useful in the following reflection phase. while planning and action were initiated by the participants themselves, my role as a co-participant/facilitator/critical friend was to help them problematize and modify their practice, identify and develop their own understandings, and helped in forming what Carr and Kemmis (1986: 205) referred to as "a self-critical and self-reflective community."

As action research lends itself to the quality of collaboration, a particular concern for me as an outside researcher was whether there could be a shared or an overlapping vocation between the participants (teacher educators) and myself. If collaboration was at all possible, a pressing question relates to the nature of collaboration and its constraints. Another question was whether and how teacher educators at the Faculty, coming from different disciplines and departments, could come to understand each other's theories and practices of environmental education in order to improve their practice?

The research was limited by time and resource constraints, and the duration of the study allowed only a few short cycles of action research. In addition, the action or change in practice of the participants was also limited at the time of the study, as changes in the curriculum could not be undertaken without prior notification of the administration of the faculty

The Research Site

The faculty of Education at Heliopolis University was chosen as the research site for several reasons. It is the oldest and most prominent Faculty of Education in Egypt and serves as a model for most of the other faculties of education in Egypt. Although there is no defined program for environmental education, the subject matter has been emphasized in the form of two subjects for students in the elementary education program. In addition, a number of Faculty members have shown interest in environmental education through their teaching and research. Environmental education is also appearing to have a prominent place within the Faculty of education. This was evident by the number of research projects being done on environmental education in Egypt (Ibrahim, 1984; Selim 1985; 1986; 1991; 1995; El-Shafei, 1990; Lotf Allah, 1990; Saleh, 1990; Hassanein, 1991; Abd Allah, 1992). Most of the research was by young faculty members who were soon to be planning and teaching their own courses. However, none of them employed a qualitative methodology.

In collaboration with the Ministry of Education, the Faculty of Education at Heliopolis University plays an important role in leadership training for supervisors, principals, and other educational leaders. The Faculty holds workshops to orient teachers on the most effective ways and means of encouraging environmental education through different school activities. In addition, it also holds workshops for leaders in elementary education to construct environmentally oriented (sensitive) curriculum materials as well as training teachers to teach/direct such curricula. The Faculty also works closely with the Institute of Environmental Studies and Research at the same University (Selim, 1997). The Faculty of Education at Heliopolis University has thirteen departments. In addition to Bachelor degrees in education, it offers eight different Masters and Doctorate programs and seven different diploma programs (Al-Magles Al-Alla LelGameat, 1997). In the year of the research, the Faculty had seventeen thousand undergraduate students, about eight thousand students in postgraduate programs and five hundred full-time staff members (Khaled, 1998).

Entry to the Research Site

Official Entry into the research site was facilitated by Dr. Amir Khaled, Professor Emeritus at the Faculty of Education at Heliopolis University. Dr. Khaled has a long-standing career in the field of environmental education and was personally interested in environmental education in different teacher education programs. I had the opportunity to mention and informally talk about my research plans with Dr. Khaled who demonstrated a willingness to help me seek official consent for my research proposal from the Faculty of Education. Applying for official permission, I wrote three letters to the President of Heliopolis University, the Dean of the Faculty of Education and to Dr. Khaled who acted as the liaison with the Faculty of Education. Three respective letters from Dr. Toh supported my request. A prompt reply from the Dean of the Faculty of Education, to Dr. Toh's letter served as official permission from the Faculty. Upon my arrival to the Faculty, Dr. Khaled took me on a tour around the Faculty to familiarize me with the location of different departments, the physical condition of the Faculty as well as to meet with the Dean who renewed his willingness to host the research at the Faculty. A disconcerting thing for me was the way Dr. Khaled introduced me to everybody we met as "the daughter of the Minister of Trade and Supply". While I conveyed to Dr. Khaled that such a 'personal' way of introduction would affect people's view of me as a researcher as well as my credibility as a researcher, he did not grant my request to be introduced as a graduate student and/or researcher. In the Egyptian cultural context, this mode of introduction reflects more a link to power and status (political/economic) rather than recognition and respect for the relationality valued among indigenous peoples.

Identifying the Research Participants

Dr. Khaled assured me that he had read carefully my research proposal and that the choice of the participants would be an easy step. To identify a group of six participants, the initial plan was to distribute and administer a short survey questionnaire (Appendix A) to new or 'junior' Faculty members who were teaching senior year students in different departments of the Faculty. The questionnaire was aimed to gather information about the Faculty members' background and experiences in regard to environmental education, if any, as well as their willingness to participate in an action-oriented research. The use of the questionnaire was intended to ensure that the participants had the quality of what Morse (1994: 228) describes as a "good informant," "...has the knowledge and experience the researcher requires, has the ability to reflect, is articulate, has the time to be interviewed, and is willing to participate in the study."

The second stage in the process of choosing the participants was to have initial conversations with the twelve Faculty members who responded to the questionnaire and showed a willingness to participate in the study. The conversation was to revolve around whether and how environmental education was, or could be, applied in their work. It was also planned to serve as an orientation to the research with the explanation that the participants would be included as 'active agents' and 'co-researchers' rather than passive subjects. The aim was to ensure that the participants were aware of the nature of the study, have the time to participate and were willing to engage in critical reflection on their own practices. The outcome of that stage was to identify six participants who would make up the group for the research. I envisioned a smooth process where all the steps were clear and systematic and easy to go through but it turned out to be quite different from my expectations.

On the day that Dr. Khaled and I agreed upon to distribute the questionnaire, I was ready with an initial one hundred copies. Instead of distributing them myself, he suggested that we go to the Chairs of the departments to ask for their assistance. After 'personal' introductions and a briefing about the research project and plan, the Chair and Dr. Khaled tried to convince me to disregard the idea of having "junior" staff members as participants. They were both convinced that "junior members, being new graduates, lack the experience needed for such research," as the Chair of that department has put. In addition, they both indicated their concern that the suggested sample was "meaningless," "the data collected would not lead any significant results," and "could not be generalized." While they eventually agreed that a small sample would best fit my research methodology, they were not convinced that 'junior' staff members might be more flexible in terms of time commitments, have lighter teaching schedules and might be more willing to participate in this kind of research. Instead of distributing the questionnaire to all members of the department as previously planned, the Chair of the department invited twenty Faculty members into his office to inform them about the questionnaire and to complete it during that meeting. Interestingly enough, all the questions regarding the research were directed to Dr. Khaled. Due to my location in the Egyptian culture - my age at the time; my position as an outside researcher; the Faculty members' view of me as a 'junior' and my respect for Dr. Khaled – I refrained from making any comments at that time. However, when it was time to administer the questionnaire I had the chance to introduce my research in more detail. Senior professors commented that I should have gone to the Institute for Environmental Studies; another stated that the Faculty of Education had nothing to do with environmental education and a third argued that responses to the questionnaire as it was would not lead to any statistical significance. Before I had a chance to respond, most of the Faculty members were already engaging in conversations with each other about how different courses taught in the Faculty related or could relate to the environment and include aspects and principles of environmental education. "To help" me, as one of the professors pointed out, the Faculty members present reflected on the content of the questionnaire and engaged in a process of redesigning it, with the same objective but adding more elaborate questions. In a matter of one hour, the questionnaire was reviewed more than three times. After approving the final version (Appendix B) that they have helped to put together, they urged me to retype it and return it to them for completion. Although my initial reaction to the process was discontent and frustration, I realized that I have witnessed a number of reflection-action cycles, which resulted in a revised questionnaire in which the Faculty members could claim some sense of collaboration and ownership. That day I realized that I had gained a measure of 'official' entry into the research site. Nonetheless, I also felt somewhat distant from my initial expectation of an entry that would allow me to interact freely with Faculty members in different departments.

The administration of the questionnaire took about one week and would have taken longer without the help of Dr. Khaled. Contrary to my prior plans, Dr. Khaled declined my suggestion to distribute the questionnaire myself as a chance to introduce my research and myself so respondents would "at least put a face to the person behind the questionnaire." Instead, he asked other Faculty members to distribute it on 'his' behalf, which they did promptly. The questionnaires were distributed to Faculty members who had all been teaching at least for five years and no 'junior' Faculty members were included.

Forty-three questionnaires out of one hundred and fifty (as opposed to the two hundred in the initial plan) were returned with twenty-eight willing to participate in the research. While I was somewhat disappointed at the rate of return, Dr. Khaled assured me that it was both "expected and it was great that somebody actually responded." He attributed the low rate to one or a combination of different factors: time constraints, disinterest in the research topic and distrust of research in general. Results of the questionnaire are presented in Appendix C. While I was optimistic about finding six Faculty members (out of the twenty eight) who would be willing to continue the succeeding research stages, my conversations with the respondents proved me wrong, as only two (Hisham and Dalia) accepted. The others excused themselves on the grounds of lack of time, or noted that it would require more effort than they were willing to invest. While I initially thought that the participatory nature of the research would have been an incentive, it turned out that a majority felt they were not ready to engage in the study or else had doubts about its success.

I then proceeded to orient Hisham and Dalia about the research process and expectations. From this initial sample of two participants, I was able to increase my sample size to six through various (unexpected) means. First while I was having the orientation conversation with Hisham, another Faculty member (Ayman) entered the room where we were, inquired about what we were doing in detail and immediately volunteered to participate. Two days later I received a phone call from another Faculty member (Nermeen) who told me that she was interested in environmental issues and environmental education and wanted to hear more about the research. In a short meeting afterwards, I explained the whole process to her and she showed interest in joining the research as well which increased the number to four participants.

Dr. Khaled also expressed discontent when he found out that one of the Faculty members (Eman) teaching environmental studies did not want to participate in the research project. He insisted that Eman had to be part of the research "one way or the other". I tried to convince him that the nature of the research necessitates the willingness of the Faculty member to participate, but without success. Upon his request, we met with Eman. Dr. Khaled abruptly asked her why she did not want to participate in the research. I could sense her discomfort and reluctance even when she replied "I can participate." Regrettably, I was not successful in persuading Dr. Khaled to leave Eman out of the project. Both Eman and I felt that we had no choice but to respect Dr. Khaled's request. After a few informal meetings and the first conversation Eman conveyed to me that she was "happy she had participated after all" which eased the tension that surfaced after Dr. Khaled's comments.

The sixth participant who agreed to join the study was Hassan, a professor who was a very busy Faculty member and who helped with the administration of the questionnaire but never filled one himself. Also, as he was a senior professor, I had felt a cultural barrier in directly approaching him. However, after gaining familiarity with the Faculty, I finally felt comfortable enough to ask him. He told me that he was wondering why I have not asked him before and agreed to become a participant. Contrary to all my expectations, the process of the selection of the research participants proved to be the most difficult part of the research.

The Participants

A total of six Faculty members from four different departments participated in this study. The selection process did not include 'teaching environmental courses/education as one of its criteria, but rather 'interest in teaching environmental courses/education. In order to protect the identity of the participants, I have used pseudonyms and disguised their profiles without jeopardizing the authenticity of the data. The pseudonyms, however, do not necessarily represent gender. A concise profile of each of the six participants is as follows:

Hisham, an associate professor, has a Ph.D. in Education (from the Faculty), teaches six undergraduate courses in Education (number of students vary in each course from 100 to 750 depending on the course); three graduate courses for Elementary Education (around 160 students); two graduate courses for Adult Education (200 students) and one course in one of the institutes of environmental studies (73 students). He has integrated environmental issues and concerns in a few of his courses in preceding years.

Dalia, a professor has a Ph.D. in Science, teaches two courses in one of the science departments (total of 200 students) and has not taught or integrated environmental aspects in her courses before.

Ayman, an associate professor, has a Ph.D. in Education (from the Faculty). He teaches six undergraduate courses in Education (number of students range between 70 and 450 depending on the course) and four graduate courses for secondary education (number of students range from 25 to 120). He has not taught environmental courses/education before.

Nermeen, an associate professor, has a Ph.D. degree in Social Science. She teaches four undergraduate courses in one of the Social Science departments (number of students range from 85 to 450) and two graduate course for secondary education (217 students). She integrates environmental issues in her courses.

Eman, an assistant professor, has a Ph.D. degree in Science Education (from the Faculty). She teaches two undergraduate courses for all first and second year students in the elementary education program (around 2000 students). The courses she teaches are directly related to the environment.

Hassan, a professor, has a Ph.D. in Science Education (from the Faculty). He teaches three undergraduate courses in one of the Science departments (number of students range from 220 to 470 students) and two graduate diploma courses (around 200 students). He also holds an administrative/teaching position in one of the institutes for environmental studies in Cairo where he teaches graduate course (around 180 students).

Orientation meeting with the Participants

I met with each of the participants shortly after they have been identified to discuss the details of the research project. I expressed my appreciation for their willingness to collaborate in the research and clarified with them the critical and participatory orientation of the study. I explained and answered questions about the nature of collaboration and what it meant to be co-participants/researchers. We also discussed their roles and suggestions for, at least the initial part of the research and my role as well. I realized during that meeting that four of them knew each other fairly well but did not know the other two and vice versa.

It was also beneficial at that time to arrange and schedule meetings. They offered me their timetables and Hisham and Ayman invited me to observe their classes, audio-tape them and/or take notes as I thought necessary.

Conversation as a Mode of Research

Conversation was applied as the main mode of research throughout the study. In research, conversation about a theme of mutual interest is seen as a specific form of human interaction where there is an exchange of views and knowledge evolves through a dialogue (Fenves, 1993; Kvale, 1996). Gadamer (1992: 385) asserts that "conversation is a process of coming to an understanding" or "a meaning making process" (Feldman, 1999: 125). Thus, the characteristic of a true conversation is entering the other in order to understand his/her point view about the topic of the conversation. As a "conversation have no linear logic" (Barthes, 1978 cited in Carson, 1986: 80), it allows an openness to changes of sequence and forms of questions to enhance better understanding.

A conversation is a collaborative process where two or more individuals become 'partners' (Buchmann, 1993) in the process which Searle (1992: 22) describes as a "joint activity" that includes "talking, listening, reflecting, and responding" (Feldman, 1999: 132). It is also viewed as a dialectical process (Carson, 1986; Gadamer, 1992; & Feldman, 1999) "as the participants share knowledge, views, understanding, and feelings, while relating all to their different contexts. It can lead in directions not thought of, and answer questions not asked" (Feldman, 1999: 132-133).

Conversations have become a popular method of data gathering in qualitative studies because of their richness and because it is a form of exchanging experiences in a natural friendly way. (Carson, 1986) and as "a research methodology among teachers doing action research as they attempt to make defensible decisions about their goals and actions, and result in the exchange of knowledge and the generation of understanding" (Feldman, 1999: 134).

Engaging with the participants in a number of conversations over the period of the research allowed us to explore together, their meanings and understandings of issues pertaining to environmental problems and environmental education in Egypt. As trust was building between us, the use of conversation helped in abolishing, to a certain extent, the distinctions between myself as the "researcher" and the participants as the "practitioners", thus developing "a community of cooperative investigation into significant educational questions" (Carson, 1986: 83). Through conversations we engaged in action-reflection cycles in regards to their practice.

The Conversation Sessions

The conversations with the participants were carried out over a four months period from February to May 1998 at the Faculty of Education, Heliopolis University. The research was conducted by entering into a series of three scheduled conversations with four of the six participants, two conversations with Eman who could not fit a third conversation into his schedule, and four conversations with Hassan who, due to his busy schedule as well, asked if we could divide one of the conversation sessions into two. These conversations were audio-taped and transcribed for interpretation and analysis. It is important to note that for the three participants who agreed to continue with the action research component of the study, these scheduled conversations also included planning for and reflections on the action research. Additionally, we had several other non-scheduled conversations to elaborate on action research-related issues.

All the conversations were carried out in Arabic, which is the national language of Egypt as well as the main language of instruction at the Faculty. There was a rare shift to the English language when two of the participants felt the need to use English expressions or words to better explain their points. While the use of Arabic in the conversations created a relaxed atmosphere to the conversations, there were inherent difficulties to overcome. The first was ensuring that I am presenting a clear (translated into Arabic) explanation of the research question and methodology. Second, it was essential that I could translate (into English) the meaning of the participant's narratives. A translation and re-translation of the data as well as asking English-speaking participants to check the translation of parts of the conversation assured me of their accuracy. This process also helped in ensuring the validity of the data. The process of the translation of the data served as a beneficial process in itself. Following Gadamer's (1992: 384) assertion that,

> … the verbal process whereby a conversation in two different languages is made possible through translation is especially informative. The translator must translate the meaning to be understood into the context in which the other speaker lives…. Thus, every translation is at the same time an interpretation."

After each conversation, I identified the topics discussed and provided main points of the dialogue under each topic that were shared with the participants for verification, thus enhancing the validity of the data. Presenting these to each of the participants served as starting points for reflection and as basis for new topics for conversations. The first conversation involved exploring the participants' understanding of environmental problems in Egypt. Arising from the discussion were themes related to the causes of such problems such as poverty, education, culture, religion and development. These are presented in Chapter Four. The second and third conversations were concerned with the theory and practice of environmental education at the Faculty. However, as earlier noted, for the three participants who volunteered in the action research component, the second and third conversations also included the participants' critical reflection-action encounters in regards to environmental education. These are presented in Chapter Five.

Other Research Strategies

In-depth Interviews

The long interview has been viewed as one of the most powerful methods in the qualitative armory. McCraken (1988: 9) notes that:

> … the method can take us into the mental world of the individual, to glimpse the categories and logic by which he or she sees the world. It can also take us into the life world of the individual, to see the content and pattern of daily experience. The long interview gives us the opportunity to step into the mind of another person, to see and experience the world as they do themselves.

In order to have a holistic view of the environmental situation and environmental education in Egypt, in-depths interviews were conducted with a number of official personnel comprising of the Minister of Environmental Affairs, Minister of Higher Education and the Minister of Education. In addition, some of the participants advised me to include other interviewees whom they felt would enrich the study as well as guide their practice in the light of official policies. Hence, I also conducted in-depth interviews with the Vice President for the Environment and Community Development of Heliopolis University; the Faculty of Education's Associate Dean for the Environment and Community Development; and a local NGO leader active in environmental protection activities. These interviews were aimed at highlighting official policies in regard to the Environment and Environmental Education on different levels. In addition, they helped in exploring if there was a gap between government-set official policies and practice.

Participant Observation

Participant observation involves the researcher doing a dual role, as a participant and as an observer (Palys, 1997). Participation is necessary in establishing rapport and trust which were crucial to the development of how the participants developed their concepts and how they interpreted their experiences and their meanings (Patton, 1990). During the process of the participation, the researcher is able to interact with people and the physical setting (Howard, 1995).

Throughout the duration of the study, I was a participant as well as an observer of the daily events that took place in the research setting. I tried to spend as much time as possible with the research participants before their classes, during and after class and in their free time. Participation was facilitated and encouraged by Hisham and Ayman who invited me to their classes, asked me to participate as a student, interact with students and assess their feedback, audio-tape lectures and/or take notes as I saw necessary. My participation in that sense allowed me to situate my self in the research, observe and be part of the daily routine of these two participants as well as the physical setting that they had access to.

I asked permission to participate in the other participants' classes. I attended a few classes with Nermeen. Hassan welcomed the idea but, with his busy schedule, it turned out to be impossible and Dalia and Eman refused arguing that my participation was not necessary for the sake of the research. Hassan, however, urged me to talk and interact with his students affirming that their views mattered the most and would serve as important points for reflection in our conversations. To overcome the impossibility of participation in Eman and Dalia's classes, I spent as much time as possible with them whenever possible, during their office hours, before and after class or in their free time.

I recorded my observations in a journal. In the initial phase of the research, prior to observing the participants teaching in their classes, the journal entries mainly covered physical settings and conditions of lecture theaters and rooms. As we proceeded, they also included notes on the participants' practices and students' feedback. The journal and notes were particularly useful during the reflection periods in the study as they helped in reminding me of situations and bringing ambiguous points to the forefront of the discussion with the participants.

Survey Questionnaire

The survey aims to "obtain information which can be analyzed and patterns extracted and comparisons made" (Bell, 1987: 8). The use of a survey was not in the initial plan of the study. However, the participants suggested its use as a way of hearing the students' voices and exploring their knowledge and understanding of environmental aspects, issues and problems delivered to them by the research participants. We worked collaboratively in designing the questionnaire. The process was part of the action research cycle described later in Chapter Five. We administered two hundred and eighty questionnaires in different classes; however, these were all taught by Hisham because Ayman was sick during the period, and Hassan was not teaching the students identified in the sample. While the results were never meant to have any statistical significance, they were helpful in assessing the students' points of view and different levels of environmental knowledge based on the course they were taking at the time. The results of the survey served as points for reflection for the participants and an incentive for more modification of their practice.

Research Journal

Throughout the research, I kept a personal journal that included my participatory observation notes and reflections on conversations and interviews. It also included my personal reflections on events and on research activities that helped in adding insights to further developments in the research. Keeping records of events was also beneficial in reconstructing the research at the time of analysis. The journal also included reflections on my role as a facilitator/co-participant and questions for my own understanding and practice of environmental education. The journal was also helpful during my formal and informal conversations with the participants where I shared with them some of my reflections and emerging new topics.

Document Analysis

Textual material such as the Government's environmental strategy, government's educational strategy, course outlines were examined and analyzed by assessing their environmental components and how it could relate to the participants' practice. In addition, a qualitative content analysis of select textbooks at the Faculty is also included. The participants' felt the need to examine certain books as they pertain to the environment or environmental education and another that they felt had the potential to include aspects of environmental education. The criteria of the content analysis were set by the participants and are presented in Chapter Five.

Data Analysis and Presentation

Data obtained through different research methods was analyzed critically and thematically based on various themes and issues discussed in the conceptual framework of the study. In Chapter Four and the first half of Chapter Five, data from the conversations with the participants pertained to their understandings and conceptions of environmental problems in Egypt, their causes as well as their views on environmental education with special reference to the context of the Faculty of Education. The data is presented thematically in Chapter Four and the first half of Chapter Five with excerpts from the participants' narratives. A further component of my analysis draws on related literature to critically reflect on the themes and meanings of the participants.

Data from the action research component of the study, presented in the second half of Chapter Five, include reflections from the participants on the data collected in the first part of the study as well as their reflections on the various phases of the action research cycle (planning, action, observation, and reflection). These mainly included data from the conversations with the participants, participant observation of classes, a survey questionnaire, content analysis of the textbooks, and document analysis.

Data Trustworthiness

In qualitative research studies, many researchers nowadays refer to the concept of trustworthiness in discussing issues of validity and reliability. Traditional positivist criteria of internal and external validity and reliability are replaced by the idea of trustworthiness, which according to Lincoln and Guba (1985) encompasses credibility, transferability (cf. external validity), dependability, and conformability (the latter two being parallel to reliability). Hillcoat (1996: 153) also states that "critical research requires validation within its specific context, so that the researcher does not misconstrue the evidence due to personal bias."

To enhance the trustworthiness of the data in this research, triangulation of the data was also conducted. Triangulation is a mean of cross-checking the consistency of the information through the use of two or more methods and/or sources of data collection (Patton, 1990; Hillcoat, 1996). Data generated through conversations was checked against the data collected through participant observation and document analysis. To ensure the credibility of the data, the participants were continually asked to review the data, clarify ambiguous points or aspects and give their reactions. This ensured the face validity of the research (Lather, 1986)

Furthermore, Lather (1986) includes 'catalytic validity' as one of her guidelines to ensure the trustworthiness of the data, which "points to the degree to which research moves those it studies to understand the world and the way it is shaped in order for them to transform" (Kincheloe & McLaren, 2000: 297). Likewise, Hillcoat (1996: 154) explains that "critical research has catalytic validity if the research results in the participants changing behaviors. [It] is vital to the emancipatory effectiveness of an action research project". In entering the study, I was guided by this understanding of catalytic validity, and was hopeful that the study might help the participants in a process of transformation, at least on a personal level with possible implications for structural change within their contexts. However, as the research proceeded, I became more cognizant of the significant obstacles facing the participants in their daily working lives and the top-down power structures embedded in Egyptian higher education institutions.

Ethical Considerations

This research study was conducted under the University of Alberta's University Standards for the protection for the human research participants (USPHRP, 1991: 3), which views research as ethical "when the benefits outweigh the risks and the participants welfare is safe guarded." More specifically, the study was guided by academic and professional research guidelines in relation to informed consent (participants have the right to be informed about the nature and consequences of the research); deception (avoiding deliberate misrepresentation); privacy and confidentiality (safeguards to protect people's identities and those of the research locations); and accuracy (avoiding fabrications, fraudulent materials, omissions and contrivances) (Christians, 2000).

In my study, informed consent was given by the six participants through a process in which I explained to each of them the goals and purposes of the research and assured them of the confidentiality of the data provided, including their identities, as well as avoiding any threat or harm to them. There were, however, a number of ethical dilemmas encountered.

The first area was whether confidentiality and anonymity could be fully assured for the participants in the study. Even after using pseudonyms, the participants' identity and anonymity could not be totally guaranteed as the research provides detailed profiling of the Faculty and the participants. It was imperative at the outset of the research to be "honest about the degree to which anonymity and confidentiality can be guaranteed" (Fraser, 1997: 167). The participants were informed of the process and assured that they could withdraw from the study at any time. All of them agreed to become partners in the study regardless of this concern.

The second area was concerned with my personal interpretation of the data and evaluating its importance according to my personal understanding and beliefs.

While in qualitative studies adopting a 'subjectivist' approach to evaluation is acceptable and sometimes encouraged (Simons, 1980), I felt the need to balance my potential for such bias and my personal accountability to the participants in the research. In order to do this, I ensured that different viewpoints of all participants were presented "...as what is vital to one, might be of little importance to another" (Fraser, 1997: 163). Kelly (1985: 147) advises the researcher to be clear about what is the "pursuit of truth and the maintenance of trust" in order to sustain collaboration that is required between the researcher and the researched, rather than over emphasizing the researcher's interests.

The third ethical dilemma had to do with presenting or editing out some data. Stressing the need for the researcher to maintain high ethical standards, Smith (1990) addressed the importance of assessing the consequence of the research. Similarly, Pring (1984) called for "...judging the value of what is done much more by reference to the consequences" (cited in Fraser, 1997: 165). Thus, I decided to edit parts of the data as I felt that they could generate out-of-context judgments about the educational system at the Faculty or the participants themselves. It was essential to "ensure that the editing was legitimate and carried out because of a real concern for the consequences" (Fraser, 1997: 165).

I also discussed ethical considerations with the participants in regard to their students who were involved in the research via the participant observation and survey components. Before visiting and being part of any class as a participant observer, the participants introduced me to the students and explained the reason for my presence. They were encouraged to reflect on their learning experience if they felt like it. They were assured of the confidentiality of whatever they wanted to share. This also helped in establishing rapport with the students.

Cultural Considerations

In addition to the ethical dilemmas that surfaced during this study, a lot of cultural considerations had to be taken into account. While I was "coming" from a North Country, being in Egypt meant returning "home" where I was born and raised and where I have lived most of my life. However, entering the research site reminded me of a number of cultural considerations that I seemed to have over looked. Almost in an automatic way, I realized that all Faculty members who have a higher academic rank than me were like "my teachers" which entailed a certain protocol in dealing with them. In lieu of the Egyptian culture, I called all the participants by their title "Dr." followed by their first name. Towards the middle of the research, Eman asked me to "drop the title" but I could not. While this was not a problem per se, I conceived it as a barrier as it required a certain amount of diplomacy in dealing with them.

I felt another cultural barrier when I started my first conversations with the participants. Although Egyptian, I was not only considered an outside researcher but I was also coming from a different country. I realized that building trust was going to be more difficult than I had initially expected. However, after becoming used to my presence in the Faculty and as time went by, I felt that the participants' level of trust was increasing almost every time I saw them. Some started asking me about my personal life while sharing with me part of theirs, while others told me jokes, included me in informal discussions or invited me to their homes; all of which were signs of increased trust, friendliness and relaxation on their part.

Another barrier surfaced during our conversations about their practice. A hard question for me was how to ask the participants, "my teachers" to be critical of their own practice, and more importantly, and how I would be able to convey to them my observations without being considered disrespectful and without 'transgressing' cultural boundaries. However, after building trust, I felt more comfortable asking those hard questions especially that we have discussed these components of the research in the orientation meeting.

CHAPTER FOUR

ENVIRONMENTAL PROBLEMS IN EGYPT: PARTICIPANTS' VIEW

Introduction

This chapter explores the participants' knowledge and understanding of different issues related to the environment and development in Egypt as well as on the global level. The views presented below were gathered through formal and informal conversations with participants in the study over a period of four months between February and May 1998. Conversations allowed us to explore different issues pertaining to the environment and sustainable development in Egypt in what Carson (1986) describes as a natural, friendly way. Conversations with the participants in this initial stage helped in building trust and understanding between me and the participants as well as serving as a preparatory stage before the participants moved to their own action-reflection cycle in understanding and practicing environmental education. The data is presented thematically based on the participants' narratives.

Environmental Problems in Egypt

Although the participants agreed on the severity of a number of environmental problems, the various perspectives they presented tended to reflect their different experiences and interests as well as academic orientation.

Air pollution

There was a unanimous agreement among the participants that air pollution was the "most pressing environmental problem in Egypt." While Hassan, Hisham and Ayman referred to it as an "environmental disaster," "environmental catastrophe" and "horrendous," Eman and Dalia described it as a "dangerous problem with serious repercussions", and Nermeen pointed to its "great magnitude."

Hassan elaborated on the problem,

> *Air pollution in Egypt is three times the maximum limit of pollution in the world. Cities that are on top of the list include Cairo, Alexandria, Assuit, and Ismailia. The amount of lead in the air in Cairo is quite alarming... The nature of the city and its structure with the Moqattum mountains surrounding it plus the amount of air pollutants from factories and cars ... all add to the magnitude of the problem.*

Dalia also pointed to the severity of the problem in industrial districts while Hisham named specific ones. "...Torah, Shobra Elkheima, Mostorod, and Helwan (towns or districts where there are lots of industries) have lots of kinds of air pollutants. Air pollution in these areas way exceeds the international safe limit."

Eman pointed to another dimension of air pollution.

> *There is a permanent haze of dust over Cairo. If you walk down any street and look ahead, you would not be able to see the end of it. The dust causes a foggy-like effect that is suffocating."*

Addressing the same issue, Nermeen labeled it "disgusting" and pointed to the effect that dust has on the way everything looks.

> *The buildings look dirty even when they are newly painted, cars need constant cleaning and washing, and people look like they have not bathed for weeks even if they have showered in the morning. You lose the sense of freshness that you need to give you that necessary boost to work and be productive.*

On a more critical note, Ayman contended that he usually tries to find a good side to everything. When it came to air pollution he stated that he could not use the Egyptian proverb "we are better than others" (means in a better situation than others). Pessimistically, he warned about the "... repercussions of air pollution on people's health, mental health, children's IQ and Egyptian monuments and ancient treasures."

All the participants shared Ayman's point of view about the effect of air pollution on the health of people. Nermeen pointed to the danger facing children growing up in "such an atmosphere of pollution" and "... how the health of people might be negatively affected by it." Eman also mentioned "... peoples' health affected by dust and pollutants" as one of his concerns. While Nermeen and Eman were general in their observations, others gave specific examples. Dalia described the industrial areas as "... places plagued by air pollution that spreads all kinds of illnesses and diseases." Hassan extended on this point stating,

> *...the pollutants in the air are very dangerous. Studies show that 20 percent of students living in Helwan and Torah* (cement factories' centers) *suffer from a number of air pollution related diseases and illnesses such as asthma, allergies, and other respiratory problems. This leads to their premature deaths.*

Hisham also pointed to the "danger" traffic officer's face in all Egyptian cities. "They acquire deadly diseases as a result of their daily exposure to the gases emitted from cars." He was also concerned about the increase in asthma rates, especially with regard to children.

Water Issues (scarcity and pollution)

The different kinds of water problems presented by the participants seemed to reflect their view that the severity of the water problem was equal to the severity of the air pollution problem. While Dalia, Ayman and Eman mentioned water pollution as a "major environmental issue," Nermeen, Hassan and Hisham asserted that water problems were not limited to its pollution. According to Hassan, "the problem of water has two dimensions: its scarcity and its pollution." Hisham added that even within the pollution dimension, "we have to address and differentiate between various faces of pollution."

Hassan and Nermeen addressed the issue of the scarcity of fresh water around the world labeling it "a problem of great magnitude." Hassan raised the issue of people's awareness, or lack of it, when it came to using water: "They are used to the concept of abundance. They lack the knowledge and education to understand the implications of living in a world with limited resources." Nermeen also criticized the wasteful attitudes of people in using water.

> *They believe that water is free, although it might soon be the most expensive thing in the world. The Quran says "...and we made every thing alive by water." They have to understand that water indeed separates life from death.*

Hisham drew attention to the correlation between the scarcity of water and its pollution.

> *The pollution of water makes it even scarcer. The amount of clean fresh water per person will decrease if we do not take quick and hard steps to stop the activities leading to the pollution.*

The participants highlighted a number of water pollution problems. Ayman named the pollution of the river Nile as the "most serious water problem facing Egypt." He explained that with the "...artery of life in Egypt [river Nile] polluted, the livelihood of Egyptians is threatened." Dalia identified the same concern drawing attention that the pollutants in the Nile include chemicals from factories on both sides of the river, pesticides such as DDT and others and untreated human and animal waste. Hassan complemented these opinions with a few figures.

> *Pollution of the Nile increased dramatically in the last ten years. A large amount of fertilizers and pesticides enter the Nile through agriculture sewage systems. I believe it is around 400 million cubic meters per year. Untreated human waste would add about one thousand million cubic meters per year, as for industrial waste the figure would probably be greater.*

Hisham added "bio-hazardous waste" to the list of pollutants in the Nile. He explained,

> *The methods of disposing of blood, human organs and tissues and other hospital toxic waste should be questioned. Unfortunately, hospitals in small areas with limited supervision dispose of them in the water canals and the Nile. This is an alarming health hazard.*

Eman concluded that tap water was also polluted. She claimed that it was impossible to kill all the bacteria in the water that reaches the houses. She consequently attributed the rise in the rate of people suffering from renal failure to the pollution of drinking water. Nermeen, however, challenged this opinion stating a number of points.

> *First, lots of studies on the purity of drinking water proved that it is potable. Second, the Nile is not a short canal and it arrives in Cairo relatively clean. I do believe that the water receives adequate disinfecting treatments.*

Pollution of the Northern Lakes

Hisham observed that pollution of Al-Manzalah and Marioot lakes (Lakes North of the Delta) was also a serious problem,

> *These two lakes are the livelihood of thousands of people. However, they are the dumping grounds of millions of cubic meters of industrial waste, untreated human waste and agricultural waste. They used to be two of the best fisheries in Egypt but now there are so many pollutants.*

Hassan elaborated on this point by giving an example of the concentration of mercury in some kinds of fish. "The allowable amount of mercury according to the World Health Organization is about 1 part of a million. In Marioot Lake it reached 1295 parts of a million."

Hisham, Hassan and Nermeen all pointed to the implications of the pollution of the northern lakes and their marine life on the health of people. Nermeen extended this point and cautioned about the implications of the pollution of the lakes on the livelihood of fishermen as well as on the benefit of the general public.

> *When the fish becomes polluted, fishermen lose their jobs. Lots of people depend on these lakes and now they do not know anything else to do. Another thing is the effect of the pollution of these lakes on the prices of fish all over Egypt. Egypt is blessed by lots of seas and fish should be abundant but with this pollution and others, the amount of fish decreases and as a result what is supposed to be an affordable kind of protein becomes beyond the affordability of the majority of Egyptians.*

Pollution of Underground Water

While some of the participants viewed the pollution of underground water as severe, others did not mention it at all.

Dalia, Hisham, and Hassan lamented the danger facing the quality of underground water all around Egypt. Dalia noted that underground water in the Delta was contaminated by chemicals and seeping pesticides. Hisham also observed that underground water had very high concentration of microbes, pesticides as well as heavy metals like aluminum and magnesium. Hassan emphasized the same point affirming that "underground water in Egypt, especially North of Delta, does not meet the standards set by the World Health Organization in regards to drinking water."

Solid Waste

Solid waste was the third problem mentioned by all the participants. It was viewed by Hassan, Hisham, and Ayman as "a problem equal in magnitude and danger to air and water pollution."

Hassan differentiated between the amount of waste produced by people living in urban areas and those living in rural areas stating that people living in urban areas produce most of Egypt's waste.

> *The domestic waste increase dramatically in Cairo and other cities. I believe the change in people's lifestyles lead to it. We have more disposable; more cans which means more waste. The increase in the building industry also adds to the problem with the increase in construction waste.*

Hisham reflected on the amount of waste produced by Egyptians everyday estimating it to be "… 0.7 kilograms of garbage which adds up to about 7 or 8 million tons a year."

All the participants pointed to the accumulation of garbage on the streets as a big problem. However, their opinions reflected more than one point of view. Eman pointed to the implication of waste problem on the "beauty" of Egypt and "how it looks." She described the garbage on the street as a "disgusting scene as the problem was getting worse and the country was getting ugly, and the sense of beauty was diminishing." Nermeen extended this point further linking the accumulation of garbage to other kinds of pollution.

> *The problem of waste becomes even more complex if we take into account the smoke coming out of it. Adding the air pollution problem to the amount of waste thrown into rivers and canals doubles the water pollution problem.*

Although Hisham, Ayman and Hassan also mentioned the accumulation of garbage on the streets. They were more concerned about people's behavior/attitudes towards the problem rather than the appearance of garbage. Their opinions are presented back to back.

Hisham's view:

> *The problem of waste on the streets reflects on people's personalities. Imagine living day in and day out in a filthy place. You will be disgusted, you will criticize in rage and get very upset. However, this will happen only at the beginning. After a while, it will become normal. The problem is not only the garbage but people's acceptance of it and living side by side with it in peace as if nothing is wrong.*

Ayman's view:

> *Unfortunately, people now accept the garbage unequivocally. They see it as a part of the streets and they get quite surprised if they wake up one day and find that the streets have been cleaned. Getting used to seeing the garbage and accepting it is a dangerous problem that is even bigger than the problem* [of waste] *itself.*

Hassan's view:

> *... When you sit in a clean place you tend to have clean* [clear] *thinking. I am concerned that having a dirty street or place will reflect on Egyptian's way of thinking. A lot of people now walk by tons of garbage and waste and feel that there is nothing wrong; seeing this ugliness has become normal to them. This is a disaster. The outcome of people working and thinking in a clean place is definitely better than one thinking and working in a dirty one even if they have the same credentials and/or qualifications.*

Dalia emphasized the danger of accumulation of garbage and waste on people's health. "Flies, bugs, rodents and street dogs and cat make garbage their home. The diseases transferred to humans have to be viewed very diligently and dealt with appropriately." Hassan addressed the management dimension of the problem criticizing the government for not having a clear policy in this regard. Dalia shared the same view indicating that the government was not fulfilling its responsibility when it came to garbage collection.

> *Only 50 percent of garbage and waste is collected regularly either by private collectors or the government. The government policies and resources are quite limited when it comes to collecting, sorting, and recycling of garbage.*

She also addressed the people's contribution to the problem when they burn the accumulated garbage and "take matters into their own hands."

> *The problem becomes more complicated. Instead of just the garbage, we are left with the garbage and smoke which is often toxic as a result of the burning and a lot of rodents and bugs fleeing the fire and infecting people and their houses.*

Other participants supported Dalia's speculation as well. Hassan viewed it as "... another reason for a premature death that is caused by pollution." Eman stressed the severity of the diseases carried by flies and transferred to humans. Hisham emphasized the danger of infection of certain kinds of cancer as a result of inhaling the polluted smoke. Ayman affirmed the negative effect of living in such an atmosphere on the physical health of people while Nermeen extended this point to include the effects on their mental health as well.

Egyptian Coasts

The pollution of Egyptian coasts and beaches and the destruction of coral reefs appeared on the list of priorities of some of the participants. Hassan, Dalia, Nermeen and Hisham stated that the pollution of the coasts was a big problem that needed "immediate" attention.

Hassan started by emphasizing the importance of the coasts for different development venues.

> *Egyptian coasts are around 2,420 kilometers long. They are heavily utilized for the tourism industry that brings in a lot of revenue for the country. They are also of significant importance to International trade.*

Hisham reflected on these developmental projects commenting that "...the price paid for them is quite high." Industrial pollution was his main concern in regard to the explosion of environmental problems around the coasts.

> *The Gulf of Suez is full of industrial waste and of oil from the traffic going in an out of the Suez Canal. In addition, lots of touristic boats dump their waste and oil into the Red Sea.*

Nermeen followed up by adding the destruction of the coral reefs as a devastating result related to the expansion of tourist villages. Hisham also pointed to the implications of the destruction of the coral reefs on the tourism industry.

> *Scuba divers and tourists come from all over the world to see our coral reefs, their destruction causes Egypt millions of dollars; revenue that is well-needed for other development projects in the country.*

Eman's position was not limited to the Red Sea; he addressed the dumping of chemicals and pesticides in the Mediterranean as well. She also noted that there was a very high concentration of heavy metals as well as pesticides, which pollutes the water and endangers marine life.

Other Problems

Environmental problems presented in the following section were mentioned by fewer participants and/or were not discussed in great detail as were previous ones.

Environmental Problems in Rural Areas

Hassan and Dalia both agreed that environmental problems in rural areas differed greatly from those in urban areas. While Dalia pointed to the difference in nature of the problems themselves and their magnitude, Hassan attributed the difference to the nature of people and their lifestyles.

On one hand, Hassan stated that the problems revolved around

> *...deteriorating agricultural sewer systems, limited supply of drinking water, and the disposal of untreated human and animal waste.*

On the other hand, Dalia pointed to the deterioration of the quality of cultivable land as the most pressing issue.

> *The level of ground water is rising, this affects the productivity of the land. Farmers also have irrigation problems whether it be its irregularity or the pollution of the water or the saturation of the land with water. The fertilizers and pesticides used also pause a great threat to the productivity of the land as well as on the health of the people.*

Urban Slums

Ayman labeled urban slums as a "plagued area" with a number of social problems such as addiction, violence and robbery. He was also quite vocal when it came to pointing out different environmental problems in these areas.

> *Slum areas are an environmental disaster. They have no infrastructure to provide them with non-polluted drinking water, no safe sewage system and no garbage or waste collection services. In short, no basic services for humans.*

"Infectious diseases" was also on the list of problems that Ayman warned about together with death rate of children under 5 from preventable causes in these areas.

Noise

Nermeen, Hassan and Eman listed noise as one of Egypt's severe problems attributing it to changes in people's values and attitudes. Nermeen stated that noise was one of Egypt's worst problems.

> *Where ever you go there is noise;* [car] *horns never stop, if there is a mechanic; noise never stops, people socialize even when they are 5 stories apart and the noise never stops.*

Eman commented that "quiet time" did not exist any more. She sarcastically added that "Quiet is defined in our Egyptian dictionary as lower the pitch a little bit and not stop the noise." With a smile, Hassan extended these points to include the voices of Egyptians themselves.

> *Most of the Egyptians, by nature or by habit, have very loud voices. Because of other noise, we can't hear each other unless we yell. The result is we yell even if everything around us is quiet.*

On a more critical note, he cautioned about the effect of excessive noise on the sensitivity of people's hearing sense.

The Egyptian proverb says, "he can even hear the step of the ant" [metaphor for extremely sensitive hearing]. However, noise has a negative effect on the hearing sense.

Population Growth

Although population growth is not seen as an environmental problem per se, Nermeen insisted that it had to be mentioned as one because of the strain it puts on natural resources.

> *Imagine if we* [Egypt] *were 20 million instead of 65* [million]. *We would have enough food to sustain ourselves, we would have enough jobs and resources for everyone and we* [Egypt] *would have been quite a developed country.*

Land Mines

Hisham and Nermeen declared that landmines in Egypt, especially in Al-Alamein, were a serious problem. According to Hisham, "it poses both environmental and health hazards. Egypt has one third of the mines in the world and yet the world is deaf when it comes to pleas to clear them." Nermeen supported his point of view adding that "land mines have already caused the death and maiming of lots of people."

Reflections

Environmental problems in Egypt are fast becoming a real threat to the well being of the Egyptian people. If the present trend continues, it is possible that the deterioration of the environment would become irreversible. Dr. Nadia Makram Ebeid, the first Minister for Environmental Affairs in Egypt described the magnitude of the problems as "horrendous." She explained:

> We have environmental problems that have been neglected or overlooked for 40 years. Name the problem, we have it. But, we have to prioritize in accordance with the effects of the problems on the people's health and their overall wellbeing (Interview, April 1998).

The participants presented a grasp of the environmental priorities facing Egypt. As they addressed air pollution, water issues and solid waste problems, they were in accordance with studies identifying these three problems as the major environmental problems in the country (Egyptian Environmental Affairs Agency, 1992, 2002; Tolba, 1998; ElGendi, 1998; 2002; El-Henawi, 2001). In addition to these problems, the participants presented a considerable amount of knowledge and awareness of other environmental problems and issues in Egypt. It seemed, however, that they were evenly divided in their views. On one hand, some of them tended to offer descriptive information of everyday environmental problems. On the other hand, others showed deeper knowledge and understanding of the complexity of the issues. The variations in their views seemed to represent different depths of understanding of the issues as well as different academic orientations and experiences.

Although academic field might have played a role in shaping the participants' views, it was not always a defining factor. One of them, for example was, in general, more concerned about the toxic waste and the chemical pollution, while another two seemed to have a more comprehensive view of the issues. However, with similar academic backgrounds, the others offered a more generic view of the problems that were tied to ordinary every day occurrences.

A few of the participants presented what would be considered accurate descriptions of environmental problems. Their awareness and knowledge of the issues were occasionally coupled with accurate statistical data and/or examples. Their view in regards to air pollution, for example, echoed several studies (Bishay, 1992; Hassanein, 1997; Tolba, 1998; United States Energy Information Administration, 2000; El-Henawi, 2001) that stated that the air pollution in Cairo was 3-4 times higher than the World Health Organization guidelines with serious repercussions on peoples' health. In addition, the figures that some of them had in regard to the amount of solid waste and its collection were in accordance with the data of a number of studies as well (Egyptian Environmental Affairs Agency, 1992; Tolba, 1998; El-Henawi, 2001). While some of them did not support their views with statistical data, they were often the only participants pointing to different repercussions of the problems as in the case of the effect of air pollution on the IQ of children for example (Egyptian Environmental Affairs Agency, 1992; 2002; El-Henawi, 2001) and its effects on ancient treasures (USAID, n.d.). Another example was the severe environmental problems and issues in slums (they are called informal settlements by the Government), which were in line with Tolba (1998) and El-Henawi (2001).

Although the participants acknowledged air, water and solid waste as the most pressing problems, the information they presented did not always cover different dimensions and/or causes of the problems. While they, rightly, noted that industrialization was the main source of air pollution in Egypt, their examples were limited to industries in and around the city of Cairo without reference to highly polluting industries in other governorates such as Alexandria and Assuit (EEAA, 1992) or in other cities such as the 10th of Ramadan (Samir, 1999) and the 6th of October (Tolba, 1998). Furthermore, they did not address gas emissions as a major source of air pollution despite the fact that the concentration of gases such as carbon monoxide and carbon dioxide in the air, especially, in large cities exceed the World Health Organization safe limits (El-Henawi, 2001). The concentration of lead in the air was also quite alarming with serious repercussions on people's health and has been estimated to exceed by 20 times the maximum level set by the World Health Organization (United States Energy Information Administration, 2000). Tolba (1998) and Al-Henawi (2001) attributed the alarming amounts of emissions to the increase in the number of vehicles and the shift from cargo-transport by rail or sea to land transport by trucks that increased the burning of fuel and resulted in increasing gas emissions. In addition, Egypt's rising level of energy consumption was also a major factor behind the country's air pollution. The United States Energy Information Administration (2000) stated that over the period of 18 years from 1980-1998, the Egyptian energy consumption level has risen 171%.

Moving to water issues, only half of the participants mentioned the scarcity of fresh water as an important environmental problem. Tolba (1998) addressed the severity of the problem naming water scarcity as the most dangerous issue facing Egypt pointing to the deterioration of the water per capita from 1150 cubic meter/year in 1986 to 942 cubic meter/year in 1994 and the projection of 792 cubic meter/year in the year 2000.

Although all the participants pointed to the pollution of the Nile River as the most pressing water-pollution problem, there tended to be apparent differences between their knowledge and the available information. While one of them mentioned accurate figures in regards to the amount of agricultural waste and fertilizers going into the Nile, his knowledge was not as accurate when he contended that "for industrial waste the figure would probably be greater." Tolba (1998) and El-Henawi (2001) complemented his first figures but stated that although the toxicity of industrial waste was equivalent to 10-100 times the toxicity of agricultural waste, it was estimated at about 312 million cubic meters/year in comparison to 6000 million cubic meters/year of agricultural waste.

Even though the participants addressed the pollution of the Nile, they did not address other related environmental problems such as erosion problems and dangers in the Delta and the disappearance of certain kinds of fish from the Nile as a result of the loss of silt behind the High dam (El-Gawahary, 1995). As an example, one of them referred to the deterioration of the productivity of the land, rising levels of ground water and salinization of the land, as problems facing rural areas, but did not draw any reference to these problems as caused by the High dam or exacerbated by any other problems.

Nonetheless, when it came to the solid waste problem, the participants contrived detailed connections between the problem of solid waste and the health of people as well as its connection to other environmental problems such as air pollution and toxicity. They were mainly concerned, however, with municipal solid waste. There was little mention of other kinds of waste such as industrial and hazardous waste, agricultural residue, construction waste or waterway dredging residues, which are severe problems in themselves and also contribute to other environmental problems such as air and water pollution (Egyptian Environmental Affairs Agency, 2002).

Besides their broad discussion of the (municipal) solid waste problem, rarely did they address complex linkages or draw connections between different problems. While they showed considerable amount of knowledge on separate issues, they tended to address environmental problems in isolation from each other. In the case of the rising sea level, for example, no inference was made to the effect of climate change and gas emissions on the escalation of the problem (Tolba, 1998; United States Information Administration, 2000).

Comparably, their views in regards to the magnitude of some problems were limited to their economic value and/or being harmful to certain industries. This was apparent in reference to the destruction of coral reefs as lost income and detrimental to the tourism industry. The same was obvious in the presentation of the coastal problems as "revenue generating areas," and reference to the pollution of the Red Sea. The participants made no connection between these problems and long term ecological problems such as the destruction of habitats, or their contribution to the loss of biodiversity which was not mentioned by any of the participants.

In their reiteration of environmental problems in Egypt, the participants' knowledge and examples were mainly focused on Cairo and urban centers with pollution as the main problem. Their continual reference to Cairo could be attributed to the fact that it is the governorate with the most severe environmental problems (Tolba, 1998; Egyptian Environmental Affairs Agency, 2002). Their descriptive coverage of other environmental problems such as problems in rural area, noise, land mines could be seen as a gap in their knowledge or more interest in more pressing issues like air, water, waste issues related to Cairo. Absent from our discussions was any mention of other serious environmental problems in Egypt such as desertification, soil and food contamination, natural environmental hazards, and/or other problems that are more dominant in rural, desert and/or remote areas.

Causes of Environmental Problems

It was imperative that our dialogue about the environmental problems extend to several discussions about the causes of these. The following section is an introduction to a number of themes that have been identified together with the participants as affecting the environment. The themes mentioned below were later addressed extensively in relation to environmental problems/degradation in Egypt in an attempt to assess whether they contribute to the problem or not.

Poverty, culture, religion, education, development and globalization were only a few of the topics that the participants mentioned as causes of environmental problems in Egypt. While they were mentioned briefly in this section, they are addressed at length in the following section of the Chapter.

The participants' views regarding the cause of environmental problems greatly varied. While Dalia and Eman made general comments about the causes, attributing them mostly to individual behaviors and attitudes, the rest of the participants called for a balanced look and for a differentiation between the cause of the problem according to its nature.

As Hassan put it:

> *You can't come and tell me that the outrageous air pollution in Helwan* (cement factories center) *is due to individuals' attitudes. Similarly, you can't tell me that domestic waste lying beside the Garbage outlets is due to the Government's policies.*

Both Hassan and Hisham placed the causes of environmental problems in Egypt into clear categories. These categories included institutional causes, social causes, and development and/or global causes. While the rest of the participants did not mention any categorization, the categories that Hassan and Hisham used were inclusive enough to represent all the causes mentioned by the other participants.

Institutional Causes

All the participants agreed that the government played a major role in the deterioration of the environment in Egypt. While Hisham, Nermeen and Hassan started with government planning, Dalia and Eman focused on its "failure" in protecting the environment, and Ayman put his opinion in the form of a question, "where are they?" (Government and/or decision-makers)

Hassan, Hisham and Nermeen lamented the "Government's official role" in the protection of the environment. Hassan elaborated that Egypt has always been one of the first countries to sign environmental treaties and agreements.

> *Egypt is a signatory of a very big number for environmental treaties and protocols. The International agreement for birds' protection in Paris, the regional agreement to protect the Mediterranean from pollution, the regional agreement for the protection of the red sea, the Vienna agreement for the protection of the ozone, the Montreal protocol, the agreements on bio diversity and climate change in Rio are only a few.*

Hisham complemented Hassan's list by emphasizing the "official interest" in environmental problems on the local level as well as arguing that environmental laws in Egypt were quite comprehensive. He explained:

> *We have lots of laws to deal with any environmental problem in Egypt. The legal arena is definitely not wanting in that domain. The judicial system is full of laws pertaining to cleanliness, to the protection from air*

> *pollution, to the protection of the River Nile and the latest addition is Law no. 4 for environmental protection.*

Nermeen also supported these views arguing that the problem started when government "planning did not translate into action." The three participants were quite critical of the government for the way it dealt with the environment. Drawing connections between institutions and individuals, they stressed that all these agreements and laws became useless when they were not implemented vigilantly. Hassan elaborated: "You can have millions of laws but you can always throw them at the wall (expression implying worthlessness) without their enforcement." In addition, Nermeen emphasized the "…uselessness of all official campaigns without an awareness campaign geared at educating people and conscientizing them about the importance of the environment to their well-being." Hisham complimented both views but pointed to the danger of putting all the blame on the "shoulders of one party."

> *It is like a net, you can have laws that are not efficient on their own. We need people to enforce them. We need people to understand the repercussions on their health and the well being of our country if these laws were ignored. We need a collective responsibility where the individual's responsibility is greatly entwined with that of the government.*

On the other hand, Ayman, Eman and Dalia placed responsibility for the causes of certain problems squarely on the government. Dalia stressed the government's inability to cope with the waste problem as an example.

> *They have a responsibility and they have to take it. If there is garbage they have to collect it. I don't care where it is coming from. The end result is its accumulation.*

Eman extended this point to include other issues as well.

> *The government has to assume its responsibility in providing clean water, clean streets and a humane environment for humans. We also need it to rule with a fist of steel in enforcing laws that have gone astray for long periods of time.*

Ayman supported the previous criticisms adding what he labeled as a "farce."

> *All these laws, intentions, protocols or whatever you want to call them are useless. We have a government that does not have a vision. It deals with the problems after they become disastrous. Now they are running to examine the situation of urban slums, it's a disaster. Where were they? How did they leave the problem till it got so big? This is an example of what has to be reexamined. Similarly, the environment, why was it left till its state became that bad? People are dying from environmentally related problems. Where were they?*

Social and/or Cultural Causes

There was a unanimous agreement between the participants that social and/or cultural factors contributed to a great extent to the state of the environment. They, however, disagreed about the extent of environmental damage that could be attributed to these factors. While some viewed the presence of certain social factors as 'the' cause of the problem, others viewed them as only partial contributors.

Culture, values, religion and education were on the top of the list mentioned by the participants. They all pointed to the effect of culture and values on the way people dealt with the environment. While they all addressed contemporary values of individualism and materialism on the environment, a few of them also stressed the need for a critical look at the reasons of the emergence and persistence of such values.

Dalia, Eman, Ayman and Nermeen blamed culture and/or values for contributing to environmental problems. The other participants, although did not object, urged for a look at reasons as why these values surfaced while other values closer to environment appreciation and care started disappear. Nermeen stated that a lot of harmful environmental practices were embedded in the Egyptian culture, "...especially in rural areas. You see women washing dishes and clothes in the water channels polluting them." Ayman added cultural practices in "poor urban areas" as "...people get rid of their problems by simply getting them out of their houses into the streets." Dalia also mentioned the practices of "shop owners or employees" who "...sprinkle a large amount of fresh water in front of their shops as a sign of cleanliness not taking into consideration that they are converting the dust problem into a mud one." Eman commented on the people's attitudes in general arguing that "people simply don't care."

Moreover, Ayman and Nermeen were very critical in their views, emphasizing that the "positive" values of the Egyptian people have changed dramatically with adverse consequences for the environment. Ayman explained,

> *Look around, nobody looks at anybody any more. We are confined to the limited spaces of our bodies. Everyday, we are proving that the human is an egoistic being. What environment are you talking about now?*

Nermeen echoed her concern tying the problem to the loss of our connections with religion:

> *Our religion* [Islam] *teaches us that we are God's trustees in this world. Where is this teaching represented in our daily lives? It is not there. Our sacred relationship with nature and our fellow human beings has become limited to our use of its resources rather than taking care of it.*

Although Hisham and Hassan supported the previous views, they called for a holistic approach to the issue. Hassan drew attention to the linkages between "these emergent values, development model adopted by the government and the total framework of globalization we live in." In addition, Hisham pointed to the role that government institutions and other social institutions play in nurturing "...such destructive values."

> *What is the educational system teaching? To be individualistic, to be competitive and stuff your head without thinking. What is the media teaching? Buy, buy, buy. What are our religious institutes teaching? Pray and fast without regard to the daily practices of religion. When we understand why these values emerged we will be able to counter-effect them.*

Development and Global Causes

The participants pointed to development as the main cause and contributor to environmental problems/degradation in Egypt. They all agreed that there was a direct correlation between economic development and the state of the environment. A few of the participants put greater impetus on economic development's effect on the environment while others addressed other components urging for a holistic view of development.

They reiterated that economic activities were to blame for causing environmental problems in Egypt arguing that the development model adopted was copied from the industrialized countries without consideration to the particularity of Egypt and geared towards achieving the highest growth possible without consideration to anything else. Speaking directly to the environment, Nermeen affirmed that "to development, the environment was an externality. It mattered only as to how much economic growth it could provide." Ayman supported her idea criticizing the development indicators stating that "GNP and GDP are false indicators; they do not represent the true income of people and definitely is a very limiting indicator for development. They do not report progress in any other field." Dalia and Eman were also critical of the monetary indicators of development affirming that "... poverty in Egypt was a clear indicator to its failure (monetary indicators)," as Eman put it. Hassan and Hisham added both the absence of progress in the field of education and the commitment of development to increasing consumption as evidence of its shortcomings.

Viewing development in Egypt in relation to the world economic order, Nermeen, Hassan, Hisham and Ayman noted that current development strategies had a negative effect on the environment arguing that the main benefactors of globalization were the Trans National Corporations and the global institutes like the World Bank and the IMF. Nermeen echoed the other participants' concerns when she cautioned about their motives,

> *The goals of these institutes are not the welfare of the poor or their environment as they preach. They offer us no solidarity. It depends on their interests and what they can gain by engaging in our affairs. They are sucking our blood and ruining our environment.*

Hisham had a similar opinion adding that,

> *...the hegemony of the North over the South is exemplified in the activities of these institutes. Their ongoing operations of destruction of*

> *the environment and depletion of its resources will always be evidence of their impoverishment of the South and Egypt is not an exception.*

Although Hassan agreed that some of the environmental problems in Egypt were a result of the world economic order, he urged for a deeper look at the local activities as well. Together with other participants, he drew attention to other dimensions of development arguing that "limiting it to economic growth excludes other important dimensions of development like education and health." Ayman and Hisham shared the same opinion with Hassan pointing to the availability of public free education as a sign of development and a universally accessible health system as well. Nermeen, however, pointed to the importance of the goals and content of education to the goal of environmental conservation. "We can't be teaching functional literacy and hope that students and graduates will automatically understand how to act toward the environment."

The participants also pointed to a number of complex relationships between culture and religion and development affirming that development played a major role in the way people rely on their religion or culture in relation to the environment. Nermeem asserted that "development has promoted individuality and consumers' values to those in support of the community and the environment." In addition, Hisham also stressed the role that religion could play in promoting social justice and environmental conservation if decision makers take it into their consideration during planning.

Relation between Poverty and Environmental Degradation in Egypt

While all the participants contended that there was an obvious relationship between poverty and environmental problems in Egypt, their views regarding the nature of such relationship varied.

With the exception of Nermeen, all of the participants stressed that the relation was not one of causality. They presented their opinions in quite a vivid way. *Hisham* defended the poor affirming that they are "… innocent of being the cause of environmental problems as the wolf's innocence of Jacob's son's blood."

On the same line of thought, *Hassan* explained that "… blaming the poor for causing these environmental problems is blaming the victim," while Eman and Dalia described it as '*haraam,*' "a sin." Ayman, on the other hand, was quite sarcastic in his response posing the question "why not? They are responsible for all the evils in the world, aren't they?"

On the other side of the spectrum, Nermeen was convinced that there was a definite correlation between the level of poverty of people and the way they react towards the environment.

> *While poverty might not necessarily be the only cause of environmental problems, it is certainly always associated with bad behavior, greed and carelessness.*

Eman and Dalia were on the defensive side for the poor. They both asked the question: "Aren't they suffering enough?" Eman posed another question using a proverb: "How can they [the poor] take all this? From this direction or that?" [usually used to describe someone under pressure from different directions with no hope in facing them]. Dalia explained,

> *The poor are the ones paying the price for almost everything in Egypt. They are being 'grind'* [metaphor often used to describe people who are struggling continuously for their daily basic needs]. *The same people are asked to cleanup a mess that is not theirs."*

Hassan, Ayman and Hisham were quite critical of those who attribute environmental problems to the poor. They emphasized that the accusation was a popular but deliberate misconception promoted by the real perpetuators of these problems. Both, Hassan and Ayman, called for a differentiation of environmental problems in terms of their nature, severity and the role that either the poor or the rich play in contributing to them before passing accusations. Hassan believed that the waste and air pollution problems, "…the two most alarming problems in Egypt," were produced by the middle class or the rich. He reasoned that:

> *… the poor do not have enough to eat or drink. How could we blame them for contributing to problems that are primarily caused by a certain life style and a minimum economic status?*

Ayman added that the nature of environmental problems caused by the poor or their contribution to these problems differ dramatically.

> *They use up resources, they do contribute in different ways to waste, air and water pollution and they hang on to the belief, which is most often true, that they are the victims and the oppressed.*

Both participants did not fully relieve the poor from the responsibility of causing environmental problems, but they emphasized that the root causes of their behavior must be assessed before blaming them. Ayman addressed Nermeen's opinion that "they [the poor] are the first ones to abuse resources and contribute to the waste problem," stating that a critical assessment of their reasons for doing so was vital for addressing the problem.

> *We have to find the answer to the question: Why? Why do they use up the resources, why do they dispose of their waste in the water? It is not because they are poor. Maybe it is because they don't have any other choice, maybe they don't know any better; there are a lot of factors that contribute to it and the development model we have in our country is to blame.*

Hisham agreed that these questions should be answered, but added what he described as the "… essence of the whole issue. What is the cause of poverty?" He was very critical in raising his concern that "…[Egypt] as a class-stratified country, has become the domain of the rich."

> *Both poverty and environmental problems are the consequence of affluence. They are the consequence of the economic order that makes the poor poorer and the rich richer. They are the consequence of applying a development model that caters to the needs of the rich, the so-called 'high society' making sure that the poor don't cross the line and reach a class above them.*

He elaborated:

> *If anyone looks around Cairo in districts like Misr Al-gadeedah, Zamalek, El-Mohandesseen, or Dokki* [districts that are considered to be mostly for high socio-economic status people], *they will never believe that poverty is soaring in Egypt. The problem in Egypt is one of affluence not of poverty. We have to look at the problems critically; development is catering to the wishes and needs of the rich not the needy.*

Supporting the same opinion, Hassan simply commented that "...We don't have one [development model]." He also extended the blame to the decision-makers for their policies stating that:

> *What we* [Egypt] *have is sloppiness and contradictory policies; we do not have a well-defined system that can help this country and its citizens.*

Refusing to name poverty as the only cause of environmental problems in Egypt, Ayman contended that "... poverty represents only one third of the Egyptians' problem." He affirmed that the "three things that have been around for almost 80 years continue to plague Egypt today." The Egyptian educational system has been quick to notice them and teach school students about them, I interrupted Ayman saying: "ignorance, illness and poverty," [the rhetoric being that educating people would help them to take care of their health and consequently be able to work and be productive and to get themselves out of their poverty]. Approving of what I was saying, Ayman nodded continuing that:

> *Egyptians, known by their wit, however, were quick to use this wit to lift them from poverty. You see ... we are living in the era of 'we are the ones who have painted the air,'* [expression used to imply ability of doing the impossible using nothing but wit]. *Consequently, they did not see ignorance as a problem. They were also quick to rule, with that same wit, that money can lead them to health. What they did not think about was that wit could only help them so much. Education was the only route to true liberation from illness and poverty.*

He, however, differentiated between education and awareness.

> *Environmental problems are caused by of lack of awareness not of poverty or education. Lack of awareness is ignorance not illiteracy. My grandmother was illiterate but she still had the environmental awareness that is desperately needed today to keep our health. On the other hand, today's grandmothers, mothers and daughters are literate; they are educated but they lack this awareness. Therefore, they are ignorant.*

He concluded that

> *...using the same equation, poor people do not necessarily contribute or cause environmental problems. It simply depends on their level of environmental awareness or ignorance.*

Reflections

The relationship between poverty and environmental degradation is surrounded by controversy. The predominant school of thought and its critics present opposing views. The predominant school of thought presents a rather deterministic view of the relationship between poverty and environment degradation, supporting the main supposition that poverty has a negative impact on the environment. The United Nations Human Report (UNDP 1990:7) summarizes this view stating that "poverty is one of the greatest threats to the environment." The Brundtland Commission pointed to the interdependence between poverty and environmental degradation contending that poverty was "…a major cause and effect of global environmental problems," (WCED; 1987:3). The correlation was also supported by the International Monetary Fund (IMF) that explained that "poverty and the environment are linked in that the poor are more likely to resort to activities that can degrade the environment" (1993:187). This traditional argument has also been echoed by others like Mellor (1988) as the "intertwining of environmental problems and poverty," (title) and Leonard (1989) who described poverty and the environment as inseparable twins. Many, of course see poverty as a consequence of environmental degradation as much as a cause of it, especially in urban areas.

Critics of this dominant view disputed the traditional argument, affirming that a direct linkage between poverty and environmental degradation was too simplistic. Nadkarni (2000) argues that the relationship was complex and not amenable to generalization. On the same line of thought, Lele (1991: 613) stated that "the mainstream perception of the link between poverty and environmental degradation … is an incomplete characterization." Leach and Mearns (1995) extended the idea arguing that "…simple generalizations of this multidimensional problem are often erroneous and miss many important points," (referred to in Duraiappah, 1998: 2169). These ideas were also complimented by Broad (1994: 818) who stated that "categories need to be more nuanced than simply rich-poor."

Seen through the lens of these two views, it becomes apparent that the participants' views were divided. On one hand, one of the participants' view was deeply embedded in the dominant paradigm. Although she contended that poverty was not the only contributing factor to environmental degradation, her out-right statement seemed to draw a direct relationship between the two without taking into consideration other factors. On the other hand, the other participants supported the critical school arguing that the relationship between poverty and environmental degradation was far from linear. However, a few of them did not go beyond refuting the dichotomous relationship suggested by the dominant paradigm while the rest of the participants showed considerable knowledge and understanding of the complexity of the relationship, leaning more towards the critical paradigm.

The participant's views in regard to the use of natural resources by poor people may have been based on the widely held view that the poor were in no position to use resources sustainably (WCED, 1987; World Bank, 1988; Duraiappah 1996). As summarized by the Brundtland Commission, "poverty reduces people's capacity to use resources in a sustainable manner; it intensifies pressure on the environment," (WCED, 1987: 49). This view tended to be rather limited and one sided as it did not recognize the daily attempts by the poor to protect their environment, nor did it acknowledge that not all environmental problems were caused by the poor.

Other participants' call for an assessment of the reasons why poor people use resources the way that they often do, as well as the focus on an exploration of the ultimate cause of poverty, were both at the heart of the criticism of the dominant thought (Thrupp, 1990; Broad, 1994; Nadkarni, 2000). By bringing into the picture the connection between poverty, environment and development, the three of them confirmed their understanding of the complexity of such relationship. They noted that injustice is done to the poor if/when their poverty was viewed as the only factor causing environmental degradation and concluded that any understanding of the relationship between the poverty and environmental degradation would be limited without including other contributing factors. As scholars like Duraiappah (1998: 2170) have argued, "it is not poverty but a combination of greed, power and wealth that causes environmental degradation in many developing countries." Moreover, examples from all over the world as well as from Egypt refute the traditional argument that the poor are a primary cause of environmental degradation. Studies and NGO projects point to the efforts and success stories of poor people in protecting the environment.

Applying this to the Egyptian context, it was evident that the cause of air pollution in Egypt lies in the carbon dioxide emissions from fossil fuels and lead smelters (USAID, n.d) and industrial districts like Helwan, Mostord, Shobra Elkheima , the Tenth of Ramadan City and others (Beshai 1992; Hassanein, 1997; Tolba, 1998; El-Henawi, 2001). In addition, water pollution was caused mostly by the dumping of chemical and untreated industrial waste into the Nile and different lakes around Egypt (El-Henawi, 2001; Egyptian Environmental Affairs Agency, 1998; 2002). Geneina (1998) and El-Henawi (2001) also pointed to the amount of industrial waste as the single most important contributing factor to the waste problem.

In addition, consumption patterns of the rich vs. those of the poor give a clear indication that the extravagant lifestyles which place huge demands on the environment are limited to the rich of the North as well as in the South. Reflecting on this point, Nadkarni (2000: 1188) argued that "the environment is protected today because of the existence of poverty," explaining that the quality of the environment wouldn't be sustained if the people in the developing countries adopted the lifestyles of the people in the North. Put simply, in this case, "it is found that poverty has promoted the cause of the environment," (p.1188).

Shararah (director of 'Women of Giza (governorate) for Consumer and Environmental Protection' NGO) (1998) confirmed that view stating that "... experience in Giza proves that the poor could be the ones protecting the environment even cleaning up after the rich sometimes." The role of the civil society and NGOs in helping the poor be environmental protectors in India was exemplified by Nadkarni (2000) and in the Philippines by Broad (1994). On the local level, the efforts of the 'Women of Giza for Consumer and Environmental Protection,' and 'The Association for the Protection of the Environment' NGOs were two examples of how the poor, given the right tools and support, could serve as protectors of the environment. In their efforts to protect the environment, Sharara (1998) points to the cooperation between the NGO and school children and their parents in sorting and recycling of material in their schools as well as their homes in a poor district in Giza.

> The NGO started by engaging school children and their teachers in cleaning up and recycling activities in their schools during the summer holidays. After a while, the children engaged their parents and with the help of the parents, we made agreements with local and small manufacturers to pick up the recycled materials for their use. Now, the whole community is working together for the protection of the environment.

A second example is the Association for the Protection of the Environment (APE) NGO which was awarded for their efforts to improve the lives and environment of the garbage collectors '*zabaleen*' in Kattamya, in Cairo. In collaboration with the Government, private donors and the garbage collectors, APE was able to improve the garbage collectors means of living conditions, by separating the garbage and animals from their homes to a new site in Kattamya. APE has established numerous projects where the poor, in this case the garbage collectors, now, have control over their livelihoods through income generated by recycling and development projects. These include "the Rag Recycling Project, a Paper Recycling Project, Literacy classes, a Children's club, and an "integrated Center for Collecting, Separation and Recycling of Garbage in Kattamya," (The Association for the Protection of the Environment, n.d).

Relation between Education and Environmental Degradation in Egypt

Addressing the relationship between education and environmental problems/degradation induced a great deal of discussion and contradictions (controversies) between the participants' views. Our discussion of education led us to address related issues including illiteracy, awareness and various types of education (formal and informal education). All these issues helped in drawing different implications about the relationship between the kind of education people acquire and their attitudes towards the environment

The participants views presented below could be seen as answers to the questions posed by Ayman who affirmed that answering these questions was an "... essential prerequisite to assessing the kind of relationship that exists, if any, between education and environmental degradation in Egypt." He asked:

> *What is education? What is illiteracy? What are the different kinds of environmental problems are we talking about?*

He started by differentiating between functional illiteracy and subject or specific illiteracy. He clarified the difference stating that subject illiteracy, "...lack of knowledge of an issue or a subject that may or may not affect [people's] daily life," was the determining factor in people's behavior towards the environment. He explained,

> *Remember the example of my grandmother? She was functionally illiterate; she could not read or write but she had the environmental awareness. She was subject-literate about her health; her family's well being, about the needs of the community and about the place she lived in.*

Hisham and Hassan opposed Ayman's opinion. They both were convinced that "...any kind of illiteracy [functional or subject illiteracy] contributes to different kinds of problems, environmental or other wise." Hassan drew attention to the difference between the times or the era of "our grandmothers and the era of our children." Hisham agreed stating that "the structure of the community was different, the values were different, and the needs and wants were different."

Other participants also emphasized awareness vs. illiteracy as an important factor that contributes positively or negatively to the problem. While Nermeen, Dalia, and Eman were convinced that awareness was the main factor, Hassan and Hisham saw it as only one of the issues that should be addressed.

Eman and Dalia clearly stated that environmental problems were a result of lack of awareness not illiteracy. As Dalia puts it "people do not know the danger of their actions, and they do what they do because they do not know what to do otherwise." Eman, on the other hand, affirmed that "illiteracy does not have anything to do with people's behavior. Absence of awareness of the issues is to blame and we can also blame people for this absence." Nermeen also supported that point of view extending it to include implications for action.

> *I can be literate and reading or watching stuff about air pollution or other problems but do not make the connection between the problems and my health for example. I don't know how to react or prevent such problems. ... Therefore, awareness of the issues and their solutions is the most important not illiteracy.*

Although Hassan and Hisham pointed to the importance of environmental awareness, they also cautioned that the definition of the word "awareness" itself could be deceiving. They elaborated that having environmental awareness, or lack or it, should not be considered as proof for causing or preventing environmental problems. According to Hisham,

> *... the word 'awareness' means the knowledge of something, be it a subject, a problems or anything. It does not necessarily mean commitment to act or an indication that an action has happened.*

Hassan echoed the same view lamenting that environmental awareness or lack of it was only related to causing environmental problems if "...this understanding or knowledge is translated into an action or attitude for or against the environment."

Our conversation around the topic of awareness led us to discuss the role that education plays in creating environmental awareness and attitudes. Ayman began by defining education as "the amount of information that we accumulate in our lives whether it comes through formal or informal mediums." When other participants referred to 'education' they usually meant formal education, unless they stated otherwise.

The participants presented different views about the role that education plays in creating environmental awareness and positive attitudes. The formal educational system was highly criticized. While Dalia, Ayman and Nermeen generally referred to the educational system in all its levels, Hisham focused mainly or tertiary education and Hassan and Eman extended their views to include the faculty of education specifically.

While Ayman dismissed that there was any relationship between illiteracy and environmental awareness, he observed that there was a great official interest in the well-being of the environment:

> *The educational system, in all its stages has a great amount of information about the environment. Formal education is very important in creating the awareness level needed to stress positive attitudes that today's functionally literate people need. It has to provide decision-makers with the subject literacy they need so they can make an informed decision.*

Dalia and Nermeen also observed that the educational system was loaded with information about and for the environment. They criticized it, however, for the values it encourages in students as well as for its way of delivering the information to the students. On one hand, Dalia expressed her anger about the values that the educational system stands for:

> *What are schools teaching them? They are recruiting individualistic, competitive people rather than people who care about each other or at least who should be working together for a better community.*

On the other hand, *Nermeen* shared her thoughts that the educational system does not pass on any values. She viewed the educational system as neutral with no effect on people's level of awareness or attitudes:

> *I am convinced that education neither alienates students nor brings them close to the issue of nature or the environment. I see that it does not do anything in this domain. There is definitely an outcome but it is not causing the intended effect that is in favor of, or against, the environment. Education gives information in a way that is not intriguing. The way of giving the information is like a radio that is on but no one is listening to it. It does not reach the level of creating the awareness; therefore, it is doing nothing.*

Hisham was quite critical of that view arguing that:

> *When it comes to education, there is no middle ground. Its effects are either good or bad; it is either positive or negative. It either*

> *conscientizes or domesticates. It either urges people to speak and take a stand, or pushes them deeper in their silence.*

Hisham, Hassan and Eman assessed the role that education plays in developing people's environmental awareness and positive attitudes to be a negative one. They all pointed fingers of accusations to the system in general and to the tertiary level in particular. They focused on the type and/or content of education that the universities provide and how they were geared toward exams and what they all referred to as 'the certificate'.

Hisham began by giving a background about the importance of higher education to the Egyptian society addressing the problem of the diploma disease and how formal education was still believed to be the way to social mobility.

> *It* [formal education] *is the poor's venue 'to surface on the face of the earth'* [Egyptian expression to imply moving from a lower socio-economic status to a higher one] *and climb up the social ladder. The 'certificate' became the most important thing in every Egyptian household and the more of them the better. The problem now is that getting this piece of paper became more important than what students learn in the process.*

Hassan was also critical about the type of education that is provided, arguing that "the educational system in general educates for the certificate, the exam and that is it and everything else be damned." Eman was even harsher in her views using an Egyptian expression:

> *The process of education, even at the University level has become a process of just pushing to get out of the system with a stamp called 'the certificate'. I know it is harsh but it is a process of 'an idiot following an idiot, a donkey following a donkey'* [an Egyptian expression meaning that people are engaged in the process without understanding what is happening as donkeys who would be standing in a line pushing each other to get out].

Hisham brought the concept of illiteracy once again into the equation blaming the universities for graduating "illiterate students, maybe not functionally but illiterate about lots of other aspects that touch their daily lives." Hassan and Eman also extended their views of higher education to the Faculty of Education in particular. Tapping angrily on her desk, Eman emphasized that "...the real cause of environmental problems is this place [Faculty of Education]. She blamed the Faculty for poorly preparing its students for "... the challenge they face in teaching their prospect students positive attitudes towards the environment." Hassan was even more critical enumerating a number of shortcomings of the faculty when it comes to preparing students with skills and attitudes. "We do not teach our students skills, responsibility or how to question, think critically or analyze." Addressing the issue of environmental awareness in particular he elaborated:

> *The education we provide our students with and the one that they will provide their students in the future, simply, 'its absence is better'* [Egyptian expression meaning that the absence of something will lead to some sort of benefit]. *Both our curriculum and pedagogy and on the top of them the instructors and professors alienate students from nature and teach them that what is out there is the best that could be.*

... We [Faculty of education] are responsible for silencing them and making them passive, non-contributing members to their communities. As a result, they will be responsible in silencing lots of generations. If you look at it from this angle, then yes, education in general, higher education in particular and this Faculty [of education] more specifically, are responsible for causing lots of the environmental problems we are faced with today.

Reflections

From the participants' opinions, it was clear that they were divided in their judgments about the relationship between education and/or illiteracy (functional or subject based) and personal attitudes leading to environmental problems. On one hand, some of them were convinced that achieving environmental awareness was enough to lead to a change towards a positive environmental behavior or attitude. On the other hand, the others advocated the view that awareness per se did not necessarily lead to social change or change in attitude, arguing that positive behavior toward the environment was only possible by addressing the affective as well as the cognitive domain (cf. Iozzi, 1989a; 1989b; Pooley & O'connor, 2000). Furthermore, some of the participants also argued that formal education alienates students from nature; a view endorsed by Suzuki (1989) and Orr (2003) who argued that courses taught indoors induce passivity.

The participants agreed that the curricula of different subjects in schools contained a considerable amount of information *about* and *for* the environment. However, they also stressed the role of teachers in the education of these courses which brings into the equation the importance of having competent teachers (Selim, 1995). In an interview with Dr. Hussein Bahaa El-Deen, the Minister of Education, he stated that "environmental issues have been integrated in most of the school curricula" (April, 1998). He however, stressed that "even if the student teachers did not get enough training on how to teach these new courses, they will have to learn as they teach them."

The participants in general saw tertiary education as contributing to the problem because of the values it passes on to the students. Thus, they surmised that there was a positive correlation between formal education and people's attitudes leading to a deteriorating environment. In addition to stressing the previous point, they also indicated that the Faculty of Education itself plays a role in the chain reaction, as negative attitudes of students who would be future teachers would be passed on to the future generations.

In addition, half of the participants raised the obstacle posed by the preoccupation in Egyptian higher education with acquiring "certificates", or what has been referred to as the diploma disease in education and development worldwide (Dore, 1976). As Hargreaves (1997: 1-2) has argued, "the characteristics of the disease and the circumstances he (Dore) associated with its presence were made clear (in Egypt)… (as) the diploma disease, or paper qualification syndrome, meant that selection for higher education and then employment became the driving force behind schools." The participants' views reflected these points by stressing that the Faculty has a diminishing role in facilitating a process of more authentic learning and teaching that would be essential in implementing environmental education.

In sum, the participants' opinions could be seen as evenly divided. With half of them stressing the importance of environmental awareness as the main component of environmental education, their views fall within the paradigm of education *about* the environment. The others however, advocated a more transformative vision where education plays an important role in social change and transformation. Hence, their views were leaning more towards education *for* the environment or education for sustainability.

Relationship between Religion and Environmental Degradation in Egypt

All the participants agreed that there was/is a direct relationship between religion, specifically Islam, and the environment. They pointed to the theoretical nature of the relationship, or what it ought to be like, as contrasted with what it actually is. While they all pointed to the fact that Islam, as a way of life, (preaches) has the values needed to preserve and protect the environment, they also pointed to different dimensions of the existent relationship between Islam and the environment in Egypt. Neglect, "superficialization," ignorance and fear of Islam were a few of the mentioned dimensions.

Nermeen was the first to bring into our conversations the relationship between religion and the environment, constantly referring to "religion [Islam] [as] a sure way to protect the environment." However, she was also quite critical about the role that religion [Islam] played in Egyptians' lives. While elaborating on the causes of environmental problems in Egypt, she pointed to the absence of the role of religion in preventing the problems asking: "where is our religion [Islam]?" Without hesitation, she affirmed that

> *We have neglected it. We have abandoned the values of stewardship so prominent in our religious teachings for the sake of fashion and modernity. We have done that without thinking about the extent of betrayal of our religion* [Islam] *we are constantly engaging in.*

The other participants supported that view arguing that the essence of religion was not evident in the way people acted towards each other or the environment. They all also concluded that part of the causes of environmental problems in Egypt was due to the separation between Islam and daily lives of Muslims. Hisham explained that "... the deterioration of the environment is only one of the consequences of that separation."

In addition to neglect, mentioned by Nermeen, Ayman and Hassan criticized what they referred to as the "superficialization of religion" and its effects in dealing with environmental issues. Ayman explained,

> *... A person gets the 'religious' labeling according to attire. A religious woman is the one wearing a hijab* [head cover]. *A better class of religious woman would be one wearing a khemar* [very loose clothes usually in solid dark colors]. *A religious man would be wearing his beard long. While these are recognizable signs of Muslims, they do not cover behavior or attitudes toward nature, animals or each other.*

Hassan added another kind of superficialization pointing to "...a class of Egyptians who believe these religious values [pertaining to taking care of the environment] are '*baladi*' ('*baladi*' is a word used by Egyptian elites/snobs who view everything that is traditional as old-fashioned, low-class or retarded)."

Dalia and Eman also added the portrayal of Islam, in the media, as one of the reasons people step away from its values in their daily lives. On one hand, Dalia noted that media feeds the "anti-Islam sentiment," affirming that "It [Islam] is portrayed as a violent and barbaric religion. This portrayal prevents people from looking at the values of Islam as a way of life and caring." On the other hand, Eman pointed to the sentiment of "indifference" the media creates towards Islam.

> *The Egyptian television does not represent the Islamic culture. It is simply not present except for a few short programs focusing on Praying. People take Islam as another religion and this is very dangerous. It is not just another religion; it is the way we* [Muslims] *should be living.*

Hisham echoed the same concern, labeling Eman's view "trivialization of religion." Together with Hassan, Nermeen and Ayman, he called for a critical look at the reasons leading to the surfacing of such dimensions. In so doing, Ayman linked Dalia's point about the growing anti-Islam sentiment with Eman's about indifference to Islam from the political climate in Egypt. Hisham, Nermeen and Hassan pointed fingers at the development model while Hisham also blamed the educational system and pointed to the need of increasing the religious component that is related to environmental care in school curricula. Ayman explained that the linkage between the deterioration of the practice of Islamic environmental values and the political climate could be traced to the "…recent terrorist attacks on tourists" (recurrent attacks: Most recent at the time of the research was the Luxor massacre November 1997).

> *…Ever since then, Islam has been associated with violence and suspicion. The political system in Egypt together with the media equated Muslims with terrorists. … The result, 'non-terrorist Muslims'* (sarcastic tone), *in their fear to be labeled 'terrorists', became afraid to practice Islam in their everyday life. Environment is not excluded from this daily practice.*

Hisham summarized Ayman's views in two words: "people's ignorance and fear [of religion]." He elaborated that ignorance was a root cause of the "neglect" of Islam when it came to the environment.

> *In general, Muslims are familiar with the broad Islamic principles pertaining to the environment. However, it seems unclear if they have a full understanding or comprehension of their depths and what they should be doing. A critical look should be paid to the educational system in this regard.*

Hassan, Hisham, and Nermeen also accused the development model of 'ignoring' Islamic values and teachings. As Hassan put it, "there was no room in the development model for religion. We copied it from the West without consideration of what Islam says." Nermeen also tied the development model in Egypt to the power relation between the North and the South.

> *It was in their* [North Countries] *best interest. If Islam were part of the plan, Muslim countries would have been flourishing and equal if not better than them* [North countries]. *Consumerism would have been limited, corruption would have been conquered, and development would have been achieved.*

Hisham added, "… and harmony and balance with nature wouldn't have been a problem," Moving from criticism of the current relationship between Islamic practice and the environment to what it ought/should be like, the participants, without exception, showed considerable knowledge about it. They pointed to numerous examples from the Quran (Islam's holy book) and '*Sunnah*' (Prophetic teachings) about the role of humans on earth and about different regulations pertaining to the environment.

Nermeen, Dalia and Eman quoted the role of human beings from the Quran when *Allah* (God) addressed the angels telling them that He was creating Adam "Behold, the Lord said to the angels: I will create a vicegerent on earth…'" (Quran 2:30) (reference added). Nermeen explained that the '*ayah*'(verse) is a summary of the responsibility laid on humans' shoulders.

> *We are 'Kholaphaa'* [trustees]. *The earth is not ours to use or abuse as we please; it is a kind of 'amanah'* (to be kept for safekeeping) *that we have to take care of and cherish.*

Dalia supported Nermeen's view stating that the "*Quran* is full of '*ayat*' (verses) that pertain to the prohibition of the destruction of Earth." Eman quoted one of these '*ayat*' (verses) She added that the "'*ayah*' is comprehensive enough to include all sorts of issues pertaining to the earth and what is [living] on it."

All the participants acknowledged that the *Quran* and *Sunnah* were full of examples and ways to regulate all aspects of life and that the environment was no exception. Hisham elaborated,

> *The environment is only a part of what Islam regulates. The Quran and Sunnah are full of examples of how to treat animals, the earth and each other. It is a holistic book and a comprehensive Sunnah.*

He mentioned the essence of the *Hadith* (Prophet Mohammed's (PBUH) saying: "No body tries to win over this religion (meaning Islam) except that the religion wins." Reflecting on the environment he explained:

> *Islam is a religion of mercy and compassion. If you look at the hadith* [Prophet Mohammed's, PBUH, teachings] *you will find that it preaches a relationship between Islam and the environment is based mercy and compassion.*

All the participants pointed to the importance that the *Quran* and *Sunnah* give to the natural environment. Nermeen quoted the '*ayah*' (verse) that refers to water as the source of life "We have made from water everything living" (Quran 20:30). Hassan pointed to the earth as a living entity also quoting from the *Quran*: "From the earth We created you, to the earth We will return you and from the earth We will bring you for a second time" (Quran, 20:55). Hisham and Eman referred to the ayah that urges Muslims to be moderate: "…Eat and drink, but be not prodigal. Lo! He loveth not the prodigals" (Quran, 7:31).

In addition, the participants pointed to a number of hadiths that exemplified how the relationship between humans and animals and nature should be. It was interesting to notice that they all mentioned well-known hadiths about the mercy and kindness of Islam towards animals. Nermeen, Eman and Hassan referred to a Hadith about the woman who tortured her cat. "A woman who tied a cat will go to Hellfire; she neither fed it, nor allowed it to find food on its own." Dalia and Hisham and Hisham referred to another hadith about a man giving water to a thirsty dog.

> *While a man was walking he felt thirsty and went down a well and drank water from it. On coming out of it, he saw a dog panting and eating mud because of excessive thirst. The man said, 'This* [dog] *is suffering from the same problem as that of mine! So he* [went down the well] *filled his shoe with water, caught hold of it with his teeth and climbed up and watered the dog. Allah thanked him for his* [good] *deed and forgave him* [his sins] (exact wording of the hadith is cited in Abu Sway, 2002).

Another hadith that Ayman, Hisham, Dalia and Eman noted referred to planting: "When doomsday comes if someone has a palm shoot in his/her hand, he/she should plant it" (Narrated by Bukhari, cited in Islamset). (Note: authentication and exact wording of the hadiths was added).

Reflections

The continuous deterioration of the global environment is coupled with a global call for spiritual renewal to rekindle our appreciation and care for the earth and its components.. In our pursuit to reorient ourselves in relation to the Earth, religion becomes instrumental. This is especially true in the Egyptian context as religion is often viewed as one of the pillars holding the Egyptian society intact together with the uniqueness of Egypt's location and the Nile (Goueli, 1999). The discussion of the relationship between religion and environmental degradation in Egypt is limited to Islam as Islam is the main religion in Egypt, with the laws of the country based on the *Sharie'ah* and the participants were all Muslim.

To Muslims, the Quran is the book that covers and regulates, directly or indirectly, every aspect of their lives (difference in practice or level of adherence to the Islamic principles depends on the individually. Abu Sway (2002) elaborates that there are a number of verses in the Quran that define "its epistemological parameters." As a book of guidance, he quotes "This is the book; in it is guidance sure without doubt, to those who fear God," (Quran: 2: 2). Another verse also shows the Quran as encompassing the foundations for knowledge and ethics; "Nothing have We omitted from the book..." (Quran, 6: 38). Izzi Deen (1996) explains, the Muslims' beliefs, that the Quran contains instructions for a complete way of life rather than separate scattered ethical values. "There are political, social and economic principles side by side with instructions for the construction and the preservation of the earth," (p.167).

In addition to the Quran, Muslims also rely on the *Sunnah* (Prophet Mohamed's, Peace Be Upon Him (PBUH), teachings) for guidance for their daily lives. According to the Quran, Prophet Mohamed (PBUH) is the role model and his life is the example to follow, "And you have in the messenger of Allah [Prophet Mohamed (PBUH)] a role model." The importance of the Quran and the Sunnah, as the foundations of Islam, are stressed through a hadith (literary form of Prophet Mohamed's (PBUH) teachings) that states: "I [Prophet Mohamed PBUH] left between you (with you) what if you follow, you will never go stray; the book of Allah [the Quran] and Sunnah of his messenger (Prophet Mohamed PBUH)."

Islam identifies the relationship between humans and the environment by first "establishing the bedrock of the relationship between finite, mortal human beings and the infinite Divine, the secular and the sacred" (Izzi Deen, 1997). According to this relationship, Muslims accept that they are created beings and that everything on earth, including them, worships the same and only God. The basic role of humans is evident from the Quran "I have only created jinn and humans that may Worship Me" (Quran: 51:56). Thus, Muslims believe that the foundations of any relationship including that with the environment is based on clear-cut legal and ethical foundations formulated by God '*Allah*' (Izzi Deen, 1996; Islam Set, n.d; Abu Sway, 2002). In regulating their relationship with the environment, or any other matter in their lives, Muslims refer to the Sharie'ah that is often referred to in the West as "Islamic Law." However, the Sharie'ah meaning literally "the source of water," (Izzi Deen 1996: 64; Smith 2002) "does not separate legal rules from ethical principles." Muslims, believe that water is the base of life. By analogy, the Sharie'ah is also viewed as a source of life that combines both the ethical and legal principles as formulated by God 'Allah'. Any action that is in accordance with the Sharie'ah is considered worshipping. As worshipping covers all aspects of Muslim's lives, it is not limited to ritual practices. Every act, as long as it is good, such as protecting the environment, is considered an act of worshipping; an act of faith (Abu Sway, 2002; Kurd, 1993-94; Islamset, 2000; Islam and Ecology n.d.)

Although none of the participants explicitly mentioned the role of the Sharie'ah in regulating the relationship between humans and the environment, they all referred to the Quran and the Sunnah - which are the source of the Sharie'ah – as regulating such relationship. Addressing the role of human beings in the relationship, they referred to the vice-regency or trusteeship of humans on Earth. Vice-regency is the foundational category of the relationship between humans and the environment (Abu Sway, 2002; Islamset, 2002; Izzi Deen, 1996; 1997). The participants pointed to the role of vice-regents as not to corrupt or destroy the environment implying that "… the purpose of this trust is the welfare of God's creation" (Denny, 1998). The word 'amanah' or safekeeping used by one of them "entails both the privilege and the responsibility of humans in taking care of God's creatures." The privilege is evident in that the trust is given only to humans, as no other creature is capable of protecting the environment. In addition, humans are entitled to certain rights under the divine law (Ganam, 2002). However, while they are entrusted with the maintenance and care of the earth, their use should be within the limits dictated by God's trust (Islam Set, 2002). Islam acknowledges that such responsibility is burdensome and the Quran points to God's offer of the global trusteeship to other creatures that refused it out of fear. "Lo! We offered the trust unto the heavens and the earth and the mountains, but they shrank from bearing it and were afraid of it and the human assumed it..." (Quran, 33: 72). The collective responsibility and accountability of humans implied by God's trusteeship is also implied in Prophet Mohamed's (PBUH) hadith:

> Verily, this world is sweet and appealing, and Allah placed you as vicegerents therein; He will see what you will do. So, be careful of [what you do in] this world... (Narrated in Sahih Muslim, cited by Abu Sway, 2002)

Prophet Mohamed (PBUH) pointed to the individual's accountability for his/her actions also touching upon being a vice-regent on Earth. "Everyone of you is a guardian and every guardian is responsible for his/her chargers. (Narrated in Sahih Bukhari, cited in Kamal, n.d.). This responsibility includes, but is not exclusive to, the environment.

In their criticism of the existent relationship between religion and the environment in Egypt, the participants were critical of the way Muslims were acting toward the environment. The implications of their acts of faith -- or the lack thereof -- it could be interpreted that the people have breached the basic rule as trustees on Earth; to care and protect it. One of the participants was critical of limiting religion to attire in accordance with Abu Sway, (2000) and Izzi Deen (1996; 1997) who differentiated between rituals as manifestations of faith, and the devotional actions that are in accordance with the Sharie'ah, observing that all kinds of actions were acts of faith. In addition, all the other participants' views could be interpreted in the same line as they all pointed to the effect of separating Islam from everyday life on Egypt's environment.

While the participants pointed to a number of Verses to exemplify the importance in the Quran of certain components of the environment, like the earth, water, animals and plants, their opinions fell short of explaining their significance according to Islam. To use one of the participants' words "...it seems unclear if they have a full understanding or comprehension of the depths..." While one of them, for example, pointed to the earth being a living entity he did not, however, address that as an entity, "...the earth and its components are in continuous praise of their Creator" (Izzi Deen, 1996). "The seven heavens and the earth and all that is therein praise Him, and there is not such a thing but hymneth his praise; but you understand not their praise..."(Quran, 17:44). Contemplated as a mirror reflecting the Divine God, Nasr (cited in Hope and Young, 1994) points to the components of the natural world as recurring symbols of immanence and transcendence. The reference in the Quran to Earth *'ard'* 485 times (Izzi Deen, 1996; Islam and Ecology, 2002) and the heavens and the skies 320 times (Smith, 2002) is evidence to the importance of the natural world. In addition, several Chapters in the Quran begin with God taking an oath by the creation like: By the Sun, and its light, By the moon that follows, By the Heavens, the stars, the night and others (Abu Sway, 2002). While these oaths are evidence of the power and wisdom of their Creator, Muslims are reminded that all creatures of God are nations that perform the basic role of worshipping and glorifying God: "There is not an animal in the earth, nor a creature flying on two wings, but they are nations like you" (Quran, 6:38). All this fosters the sense of responsibility of human beings toward the natural world and their use of resource for their survival.

Denny (1998), Abu Sway (2002) and Islam Set (2002) observe that an Islamic environmental ethic pertaining to all aspects of the environment could be constructed based on the teachings of the Quran and the Sunnah arguing that this would be useful in finding solutions in the current contemporary context. Thus, the participants' examples in regards to the care for animals and plants implied their knowledge of Islamic ethics in regards to the environment and could be interpreted as inference to the wider environmental ethics in Islam. The participants', rightly, confirmed that Islam enjoins kindness and mercy towards animals. Prophet Mohamed (PBUH) narrated a number of parables of people who were gentle or ungentle to animals. The two hadiths referred to, by the participants, serve as examples. The Sharie'ah regulates all aspects of the relationship between human beings and animals asking people to treat animals well and not to kill them except for food. Even if killing was for food, it has to be done in accordance with the Sharie'ah taking into consideration the "psyche of the animal" (Abu Sway, 2002; Islam Set, 2002; Izzi Deen, 1996). In this regard, Prophet Mohamed (PBUH) instructed Muslims to "...excel in slaughtering; sharpen your blades [so you may] relief your slaughtered [animal]" (Narrated by Muslim, cited in Abu Sway, 2002). In accordance, Islam also prohibits killing in the name of sport (Kamal, n.d); setting animals against each other (Abu Sway, 2002); taking animals as live targets (Islam Set, 2002); killing for fur (Abu Sway, 2002); riding on weak animals and over burdening animals (Islam Set, 2002). Mercy and kindness to animals is extended beyond the physical harm as Prophet Mohamed (PBUH) has also prohibited cursing animals of burden (Abu Sway, 2002; Smith, 2002). Kamal (n.d) observes that these stories were recorded "1,400 years ago – long before it became fashionable or 'politically correct' to care about animal rights."

In addition to animals, the participants cited another hadith that states the importance of planting even if the world was coming to an end. The hadith implies the importance of improving greenery even if Muslims don't benefit from it themselves. Planting and improving greenery in general is interpreted as part of Muslims' duty to the Inhabitation '*I'mar*' of the earth (Abu Sway, 2002; Islam Set, 2002). Prophet Mohamed (PBUH) states that "When a Muslim plants a plant or cultivates a crop, not bird or human being eats from it without it being accounted as a charity for him (her)" (cited in Mahmood 1998; Smith 2002, referred to the same Hadith). In addition to the reward awaiting Muslims for engaging in planting, the Sunnah also notes the punishment for cutting trees. "He who Cuts a lote-tree [without justification], Allah will send him to Hellfire" (Narrated by Al-Tirmidhi, cited in Abu Sway, 2002, p.15-16). Through these examples, Islam's position in regards to current, direct or indirect, destruction of trees by deforestation or acid rain could be inferred.

A few of the participants also pointed to the negative effect of development on the environment as a result of not including the vision of the Islamic faith in the planning. Interpreting development through the category of Inhabitation of the Earth, it becomes apparent that contemporary development did not take positive measures to protect the environment. Islam Set (2002) refers to the positive attitudes and measures that should be taken during Inhabitation (development) by citing Ali ibn Abi-Talib's, the fourth Caliph, words to a man who had developed and reclaimed abandoned land. "Partake it gladly, so long as you are a benefactor, not a dispoiser; a cultivator not a destroyer" (p.3).

The Sharie'ah also mandates that Muslims abide by Islamic codes of conduct during the time of war. In regards to the environment, it orders the protection of trees, crops, animals and vegetation side by side with civilians – all of which would be necessary to the restoration of peace (Kurd, 1993-94). Thus even during war, Muslims should observe certain limits. These limits are summarized by Abu Bakr, the first Caliph, in addressing one of the commanders of the army before going to war,

> ...I instruct you [to fulfill the following] ten [orders]. Do not kill a woman, nor a child, nor an old man; do not cut down a fruitful tree; do not destroy [land or housing] in use; do not kill a goat or a camel unless for food; do not flood palm trees [with water] nor burn them down (Narrated by Malik Ibn Anas, cited in Abu Sway, 2002, p.2).

By extension, all weapons of mass destruction are unacceptable from an Islamic point of view. In addition to their effects in killing civilians without discrimination between men, women, children and the elderly, they are also used in destroying the environment as part of collective punishment.

While Islam offers instrumental ways to regulate the relationship between human beings and the natural environment, it is also vigorous in protecting human beings and the environment from the impacts of external factors such as pollution and waste under the premise that damage of all forms and kinds is forbidden (Islam Set, 2002). "There shall be no damage and no infliction of damage" (hadith narrated by Malik, cited in Islam Set, 2002H). In connection, the *Sunnah* gives more importance to the prevention of damage or harm that takes precedence over the acquisition of benefits. Accordingly, all development activities such as agriculture, industrialization or communication should be carried out without causing injury or harm to others or to any element of the environment. Thus, all kinds of pollution, depletion of natural resources and other environmental problems are considered as damage. Islam mandates that all efforts be exhausted to find damage-free ways of development. If that is not possible, Islamic jurists urge the use the "lesser of the two harms." (Islam Set, 2002, p.2).

Taking into consideration Islam's teachings in relation to the environment, it would seem likely to find collective action on all aspects of the environmental care in Islamic countries. However, the participants' reflection on this point concluded that the separation between daily lives and religion was the reason for that not being the case. While some of them attributed it to Egypt's development model others pointed to the role of the media in causing that separation. These ideas support Izzi Deen's (1997) view that "the schism between the spiritual and the "scientific" was imported into the Muslim mind and land when the material, industrial culture was introduced, effectively separating the political system from the traditions of the community" (p.4).

Relation between Development and Environmental Degradation in Egypt

The participants were unanimous in their views that there was a direct relationship between development and environmental problems/degradation in Egypt. While their main focus was on the role of economic development and activities on the state of the environment, they also drew several links between the role that development played in connecting culture, education and religion to the environment.

The participants were critical of development in general as well as in relation to the environment. Hassan called it "the no development model," Hisham referred to its "negative effects on the people and the country as a whole," while Ayman offered a vivid image to describe development in Egypt using a well-known proverb, "You promised me an earring, so I pierced my ears. The earring never came and my ears never returned the way they were (healed)." The proverb is usually used when people hang on to false promises and they suffer the negative outcomes when promises are not kept.

Before addressing the relationship between development and environmental degradation in Egypt, the participants referred to the definition of development arguing that it has usually meant economic development. Hassan pointed that "it [development] has always been limited to and synonymous with economic growth." Speaking to the Egyptian context, Dalia and Eman supported his view stating that economic growth was Egypt's main target without regard to other factors. Hisham felt it was useful to point to the trickle-down theory that Egypt was following,

> *The economy was and is still given the first priority. It was a given that after a period of soaring inequalities and other social problems, the benefit accrued to the elite and the rich would finally reach the large majority of the population at the bottom of the pyramid. This has proven its failure.*

Together with the rest of the participants, he contended that "the development model in Egypt neither achieved economic growth for the majority nor addressed the environment or other issues."

In relation to the environment, all the participants addressed the economic dimension of development as the major cause of environmental degradation in Egypt. They argued that, in Egypt's pursuit of development, the environment as well as other issues took a back seat. They contended that the problems that Egypt was facing were the outcome of more than 30 years of development that had only economic growth as its priority. Industrialization, open markets and globalization were its acknowledged pillars, but the participants pointed to different time frames for development's ascent over the Past 30 years. Hisham referred to the post colonialism period when "Egypt followed the Eastern Bloc and imported most of its factories that never took the environment into consideration." Hassan compared Egypt in the 1930s and 1940s with a few industries and green land and farms to the 1970s when the cultivable land was urbanized. Dalia, Ayman, and Hassan pointed to the seventies as the "era of *infitah*" (open door). *Ayman* and *Hassan* affirmed that the Egyptian environment has deteriorated exponentially and at the expense of the people and their welfare during that period. As Hassan put it,

> *It was all geared to achieving the most economic revenue possible in the least amount of time without consideration or assessment of other issues like health hazards, long term effects on development and economy of the country and for sure not its effects on the environment. The dominant system then, and now, was 'take the money and run'* (a title of an Egyptian play that became popular in referring to people who only pursue economic benefit for themselves without consideration to anyone or anything else).

Ayman supported that opinion arguing that the "…unofficial slogan was "what you can win with play with (expression referring to the saying 'ends justify means'). At that time every thing but the piaster (Egyptian coin implying money) was meaningless, the environment, the human and the whole society."

In addition, Nermeen and Eman addressed the effects of globalization and the power relations between the North and South of which Egypt was a part. Nermeen depicted that "globalization together with Aid agencies and their politics play a large role in destroying not only our environment but the values that we rely on to save the environment." Ayman confirmed that "these three factors together were enough to increase the misery of the Egyptian people, economically, socially, environmentally, etc." Eman was in agreement with the rest of the participants that most economic activities contributed to environmental degradation. Together, they pointed to examples of projects or activities that were aimed at, but did not go beyond economic growth. Hisham, Eman, Hassan, and Eman made reference to the effects of the high dam on the environment as well as its economic outcomes. Eman commented,

> *it is a rather complex issue. The high dam was deemed indispensable because of the amount of energy that it produced for industry as well as the water that it saves, but it has enormous environmental effects.*

Hassan and Dalia acknowledged the benefits of the dam but also pointed to these problems, wondering if the benefits have outweighed the costs. Hassan elaborated,

> *...the loss of silt behind it affects the productivity of the land, and affects the kinds of fish in Damietta* (a coastal governorate and also on the Nile), *and exacerbates the erosion problems as well. I am not sure that it is worth it economically or not although there is no doubt that it has saved Egypt from the dangers of drought.*

Nermeen, Ayman, Hisham and Hassan also pointed to the deteriorating level of the productivity of the land and the air pollution problems caused by the "red brick factories." Nermeen explained,

> *For years and years, farmers dug up their own prime highly fertile land around the Delta and fed it to the highly polluting red brick industry for construction. This proves that we are very shortsighted. Now, the land is barren, the air is polluted, the food that we used to grow on that land is now imported with much needed hard currency, the health of the people is affected and the farmers who used to farm the land were either unemployed or worked in the gulf areas and came back with tons of money as well as values alien to the Egyptian society.*

Hisham and Hassan pointed to the danger that some ongoing development projects posed to the environment, arguing that Toshka and North Sinai reclamation projects have already spawned adverse consequences for the environment that extend beyond their geographical locations. They were both skeptical of Egypt's ability to face the environmental consequences of these two projects, noting that there were no environmental impact assessment studies for any of the projects

Dalia summed up the environmental problems caused by development in Egypt stating that,

> *... fumes in our skies are a result of development, fertilizers and pesticides in our food are a result of development, and chemicals in our water are a result of development. All the evils in our daily life so far are a result of development.*

However, there was a need to go into detail regarding three specific issues that participants linked to economic development and environmental problems in Egypt: industrialization, open markets and globalization. A few participants argued that the goal and/or outcome of those three posed a clear and compelling threat to the environment as well. Hisham elaborated that "our (humans') pursuit of affluence is the main cause of environmental destruction." Explaining it further Nermeen pointed to "the continuously increasing drive for buying," Hassan supported both points stating that the "quality of life and development is measured by how much we can buy with our money." He was also convinced that "as part of the world order, Egypt is following the development model most adopted in the world and all its efforts are geared towards producing unnecessary things for our never satisfied greed." Ayman elaborated,

> We are geared towards consumption. Look at the television, this is not geared toward developing a country, it is developing a people with rabies toward buying *(analogy for being out of control)* and material ownership. It has become very influential in changing the wants of the people into needs. The main problem is that people believe it too.

Addressing the effect of industrialization on the environment, the participants showed considerable knowledge about the effect of industrialization on the state of the environment in Egypt. Tying it to the global picture, Hisham delineated that "… industries in Egypt were producing commodities for the rich not to fulfill the basic needs of the people and causing pollution in the process." Helwan was the example used by all of them to describe the "horrid effect of industrialization" as Eman put it. Hassan, Hisham and Dalia referred to other industrial areas causing pollution such as Mostorod, Shobra Elkheima and Torah while Nermeen referred to the city of the Tenth of Ramadan and Eman added the Sixth of October city as well. In addition to their concern for the type of polluting industries such as iron, steel and cement factories, they addressed other factors exacerbating the problem. Hassan referred to the lack of maintenance of factories as contributing to pollution problems while Hisham pointed to the age of the factories themselves as the main issue.

> *We have factories that were imported from the USSR in the fifties and sixties. The environment was not an issue. They were state of the art then and now they are very old polluting technologies.*

The participants did not however, limit environmental damage caused by industrialization to pollution but extended it to include the depletion of resources. They were also critical of the commodities produced. Nermeen asserted that the environment was used as "a cheap supermarket for industry where they get their raw materials." Eman and Dalia agreed arguing that, as Dalia put it, "they (industries) take God-made divine free things and transform them into man-made expensive commodities." Hassan, Ayman and Hisham echoed the same concerns stating that the industry was geared toward the production of commodities that made profit rather than ones that improved the livelihood of people. Ayman explained,

> *...the market rules. We are producing goods and commodities for the market. We are giving in to the commercialization of our lives and commoditization of our happiness, health and, of course, the environment and we sell to whom pays more.*

Linking it to the global picture, Nermeen labeled "producing for the market [as] problematic." She explained it thus,

> *...the market determines what kinds of commodities we produce to sell for the benefit of a few at the expense of millions. The market does not care about the environment. The people who rule the market don't either."*

Hassan related it further to globalization, claiming that its forces affected Egypt as part of the world order. Together with the rest of the participants, they addressed the effect of globalization on the environment in general as well as on the Egyptian environment in particular. They first acknowledged the interrelationship and interconnectedness of the world. Hisham observed that globalization was not a new concept but "...merely a new term." Joining his hands together, Hassan agreed with Hisham's opinion stating that "the world is lots of pieces tied together like this." Dalia and Nermeen pointed to the effect of technology in bringing people to realize the interrelatedness between the parts of the world. Nermeen referred to the " ... positive effect of the global village becoming a reality through television and now the Internet." While Dalia acknowledged the role that the media played in connecting people, she cautioned against being "that connected" arguing that "we have to be very serious in assessing the results of this media on our people especially the youth." Ayman, who compared the world to a household in a small village where a buffalo was an important member, gave a vivid example of interdependence.

> *The mother gets the milk from the buffalo to give to her children and to make butter and cheese to use in cooking as well as sell it to the village. The father uses the buffalo in farming his modest farm. If that buffalo gets sick or dies, the implications on the livelihood of this family as well as the whole village would be very severe. The children will not get milk or cheese for nutrition, the mother will not sell the products, the village will not get its requirement of butter and cheese, and the father's farming capabilities will be hindered which will mean less food for the family and the whole village.*

He concluded that this was the world where everything was interdependent and interconnected.

> *Egypt might be the cow, Canada might be the mom, and Dakar might be the people buying the cheese... and so on. It is a causes and effects relationship whether we like it or not.*

Moving to the environment, they all agreed that environmental problems were the best evidence of the interrelationship and interdependence of parts and countries of the world. Nermeen explained that "... environmental problems in one part of the world could lead to effects in a totally remote part." *Dalia* echoed the same opinion stating that "if we consider that we are living in one world with no borders, breathing the same air, drinking the same water, and eating the same food; we will see clearly that it is indeed one (emphasis added) world." *Hassan* also stated that "we cannot separate the effects of globalization on the global environment from its effects on the Egyptian environment" concluding, "...environmental problems know no boundaries."

They all named "Chernobyl" as evidence of the effect of a global environmental problem with ramifications for the Egyptian context. Ayman referred to it as "the catastrophe that should never leave our minds," while Nermeen, Hassan, Hisham and Dalia all pointed to the fear that filled Egyptians' hearts as they were warned against buying imported goods from that part of the world. Eman affirmed that "we suffered from sub-problems as the result of Chernobyl. The importing of chicken and lamb and other products from Russia and surrounding countries had dangerous implications on the health of Egyptians."

In addition to Chernobyl, Hisham added a few examples:

> *...I believe that out there, there are thousands of Chernobyl incidents that we do not know about. We heard about Chernobyl in the media but there are lots more that we are unaware of and others that we will never know about. Another example that we know about is the fires in Indonesian forests that went on for weeks and affected Southeast Asia. The global water crisis and the scarcity of fresh water are a third example. The whole world knows that there is a crisis already in the forming. These are examples that I can point to now but there are way more problems that we can remember if we just examine our memories a little harder.*

With the exception of Dalia, the participants were in agreement that global environmental problems should not be viewed as mere or simple ones. Their opinions drew attention to the role that North-South relations played in causing such problems. Eman's analogy describing the relationship between North and South countries serves as an example of the other participants' opinions. She compared the North countries to people sitting at a dining table.

Those people are eating the most delicious food and they have lots of varieties while the rest of the world's countries are people sitting on the floor around the table. These poor countries are getting the leftovers as well as the waste of the rich. You see the North just throws them the crumbs, some of it is edible and some is not, some is actually waste, i.e. garbage. If you put it in another way, the people around the table [South countries] are getting poverty, environmental problems, social problems and other problems caused by the rich countries without getting any of its fruit.

Eman pointed to the limited view of North countries,

> *Rich people at the table are blind to the fact that the poor people around the table can just turn the table with what's on it on their heads. South countries are selectively blind to that option and choose to stay inferior and play the role of the servant or 'plates' lickers'* [an Egyptian expression used to describe people who suck up to superiors, employers, or people with power].

Ayman differentiated between the problems caused by the North and those caused by the South arguing that each party's reasons for causing them were different.

> *The North is the primary contributor to smoke, carbon dioxide emissions and climatic change problems, the depletion of the ozone layer and waste. Why? Because of their greed and lavish lifestyle. The South is also guilty for logging, depletion of the natural resources and animal hunting all leading to an imbalance of the ecosystem. Why? For survival. They have no other choice. The orders are coming from up there* [the North].

The participants were divided in addressing the responsibility for causing environmental problems. Hassan, Ayman, Nermeen and Hisham were convinced that the world economic order and/or the economic relations between the North and the South played a major role in causing environmental problems while Dalia and Eman were reluctant to talk about such a relationship and its implications for the environment. Dalia's reason was that,

> *...this is going to take us to talk politics and I don't think it is necessary for the cause of this research. We are talking about the environment so let's try and stick to our issue.*

Hassan, Ayman, and Hisham portrayed the relationship between the North and the South as an unequal one. They called for a critical look at the economic dimension of globalization, arguing that it perpetuates poverty, environmental degradation and inequality between countries and their people to the benefit of what Hassan called "the lucky few." They addressed a few characteristics of the relationship affirming that there was a correlation between economic globalization and environmental degradation all over the world, especially in South countries. Hassan reiterated that "...environmental problems are the result of the new economic world order where we [North and South countries] are equal but I [North countries] am the only beneficiary." Hisham pointed to the "spread of capitalism and its institutions,"

> *After the collapse of the Soviet Union and the Eastern Europe, we witnessed the exponential and fast rise of the neo-liberalism ideology. The mobility of capital across National borders and the great powers of Transnational Corporations and International organizations like the World Bank, IMF or the WTO are also becoming more evident in everyday life.*

Extending it to the Egyptian context he elaborated that the government was following the global example and promoting the neoliberal ideology. Hassan, Nermeen and Ayman echoed his opinion. Ayman explained,

> *the drive towards privatization, open markets, encouragement of the private sector, lifting of subsidies, and liberalization of prices are all evidence that the Egyptian economy was driven by the global, economic and political system.*

Nermeen also argued that politics was no longer exclusive to governments stating that "...decisions taken by governments affect people's livelihood and consequently make everybody a politician." The rest of the participants, Hisham, Hassan and Ayman also pointed to the interrelation between the government's and corporate decisions and people's decisions arguing that politics has a direct bearing on people's daily lives. While they all agreed that the relationship between politics and the environment was quite obvious when it came to the government's decisions in regards to the environment, they also pointed to how macro-relationships have effects on the micro-level as well. Hisham and Nermeen both elaborated that macro-level politics go beyond apparent political decisions made by the government. Hisham urged for a critical look at the global picture explaining that outside forces also affected local political decisions.

> *International organizations and the monstrous Trans National Corporations have a great effect not only on the decisions of governments but on the sovereignty of countries as well. They have the upper hand in deciding on projects according to their own interests. ... While their hegemony is subtle, its effect is well felt and is brutal especially on the poor and the environment that suffer the most.*

Talking specifically about Egypt, Nermeen explained this relationship, underscoring the effects of the structural adjustments that were imposed on Egypt by the World Bank and the International Monetary Fund (IMF):

> *These Structural Adjustments cripple people's choices. Farmers have to choose their crops according to them, the fertilizer they use have to be according to them, the way they harvest, their profit if they are lucky enough not to be in debt, is defined by them. All these things affect people's freedoms and have tremendous effects on the environment.*

Ayman echoed Nermeen's concern adding that the effect was not limited to farmers but extended to other parts of the economy. He asked rhetorically,

> *What happened to local shops and small stores? They are still there but are slowly being replaced by chains and TNCs. Fast food and gas are prominent examples. Where did the erq soos, tamr hendi, and karkadeih* (drinks) *go! Our taste buds are getting used to the tasteless Pepsi, coke and others. The story is the same with other things as well.*

Hassan summed up the effect of Aid on development in Egypt arguing that Aid donors had the upper hand. "Who pays rules," he said, affirming that Aid agencies set their own conditions "…whether taking the needs of the poor or the environment into consideration or not." He added,

> *… our political stands also affect the amount of aid we get. Israel and Egypt are the recipients of the most amount of foreign aid from the United States after Camp David* (peace treaty 1977). *Our debt was reduced after we participated in the gulf war. These are factors that affect what we get. The problem with aid is that it doesn't come without a price.*

The participants extended their views to include foreign investments and their effect on the Egyptian environment as well. Hisham pointed to the nature of foreign investments and industries in the South delineating that "it became easier to export polluting industries or waste to South countries where there are poor environmental laws or a big appetite for money." Taking it one step further, Ayman added, "even if there are laws, the absence or the limited enforcement of the law make them [South countries] viable and excellent targets for polluting industries such as the tile industry in Egypt."

At this point, the three participants passed a judgment that the North was responsible for most environmental problems, even those taking place across their borders. They also pointed to the impoverishment of South countries and their environments as a result of the hegemony of the North. Hisham's, Hassan's and Ayman's views complemented each other and are presented back to back,

- *The crisis of the environment is, and will always be, in reality an evidence of the impoverishment of the South, of stealing and robbing of its resources and* [natural] *treasures. The current and ongoing practices of impoverishment caused by western imperialism ... and the offenses against the natural resources of the South serve as evidence of the power relations between the North and the South.*
- *The North countries exercise their powers on the South countries to keep them under their wing. This power is very obvious on the level of the environment. As we speak now there is nuclear waste that is being buried in a South country with or without its government's knowledge or for a price.*
- *As rich as some south countries are we have to ask who is impoverishing them? The party that is responsible for the process of impoverishment is the party that has to be prosecuted not the poor countries.*

In their criticism of development in Egypt and how it was overly determined by global factors, the participants called for a review of the current development model. Ayman, Eman and Dalia called for its reexamination in order to assess its appropriateness for the time as well for the people. Hisham, Ayman, Hassan and Nermeen addressed the human dimension of development arguing that all efforts would be limited without attention to the holistic wellbeing of humans. Hassan noted their concerns cautioning against separating the economic dimension from other components of development stating that "development is a multifaceted process."

> *We have spent a very long time talking and giving lots of attention to the economic matter and merit and to assess the benefit of every project in terms of economic input and* [economic] *output. It would have been much better if we assessed its development output. ... A project that has an economic benefit should not be considered beneficial if it is destroying the health of people, which is priceless, or destroying the environment, which is irreplaceable.*

In accordance with *Hassan's* opinion, Ayman and Eman criticized the limitation of development goals to economic growth and the use of the GDP as a development indicator, arguing that increasing the income of the poor was not the only mean needed to relieve the pressure on them. Ayman explained that these indicators were false proof of development.

> *You cannot tell me that the GNP or GDP is growing and say that's development. People cannot feel that they are reaping the value of their work. What happens next is that we engage in a cycle of pretending. The disadvantaged pretend that they are working when they are not and the government pretends that it is giving salaries when it is not and in reality this salary is not enough to cover the cost of their basic needs.*

The participants extended these views further arguing that development, in its pursuit of economic growth, had perpetuated poverty and inequality. Hisham asserted that it was developing a "certain class of people who already had power and assets to start with." Dalia, Eman, and Ayman reinforced his opinion affirming that basic needs of the poor were not met while Ayman added "... the rise of favoritism and inequality [as] a direct result of development." Referring to Rostow's five stages of growth, Hisham clarified that "Egypt as a whole country did not even reach the take off stage while certain categories of people have gone beyond the mass consumption stage with grave danger on the environment." Ayman echoed his view arguing that the discrepancy between the classes of people in Egypt perpetuated more injustice for the poor hindering their efforts to develop themselves.

> *Who's your father? Whose son* [or daughter] *are you? The questions have changed from objective measures like credentials and skills to subjective unrelated ones of power and social status... Where is the equality? We are a country that is highly stratified but we don't admit it. People caught in this trap do not care about the environment or anything else... What environment?*

Nermeen, Hisham and Hassan supported Ayman's opinion by addressing the role that development played in promoting "alien values," as Nermeen described them. Linking it back to the global picture they pointed to the rise of individualism and competitiveness at the expense of solidarity and cooperation.

Hisham and Hassan agreed that these values were an outcome of the model copied from the west promoting maximum personal economic gain. Nermeen cautioned, however, about putting all the blame on "outside" causes addressing the "superficiality of the Egyptians' connection to the world,"

> *Yes, we are* [Egypt is] *an open country but we are open with the wrong view and wrong attitude. We only learn about Madonna and other singers. Our youths only care about the fashion brands that are coming from the outside world. We criticize the West but we do not stop and learn from the good things; how they respect differences, take care of the homeless and protect their environment.*

Addressing other dimensions of development, the participants pointed to the importance of other social indicators for development and related them directly to environmental problems. Collectively, they referred to the limitation of government commitment to providing universal free and accessible health care, subsidized prescription drugs, free public education with no hidden costs and an adequate education geared in part toward community building. They referred to a number of complex relationships between development, religion and the environment; development, culture and the environment; and development, education and the environment. The relationships they mentioned in this part of the chapter intertwine greatly.

Nermeen was the first to mention the "complex relationship" between religion, development and the environment. Arguing that the neglect of religion had direct repercussions on the way people acted towards the environment, she added that "if religion was taken into consideration or consulted during planning of development, the state of the people and the environment could have been way better."

> *Development of the land is one of our mandates as God's trustees on Earth; development with the religious guidelines, not to exploit, not to waste, not to harm and not to pollute. Another important aspect of religion* [Islam] *is social solidarity. An example of social solidarity is the 'zakat'* [Islamic charity]. *If all Muslims give the zakat according to the Sharie'ah, we would have had no hungry person; people who give zakat observe other aspects of religion as well and would know that the teachings of Islam honor the environment.*

Hisham and Ayman acknowledged Nermeen's opinion but stressed the need for social justice prior to social solidarity. Hisham quoted a verse from the Quran stating that "Allah enjoins justice and charity..." pointing out that justice preceded charity, "...a lesson that decision makers should take into consideration." Ayman added that "if justice and equal distribution of resources are taken into consideration, the needs of the people would be met and the need for charity curbed."

Hisham, Hassan and Nermeen also tied the problems between development and the environment to the role that education played in promoting development. They urged that a critical look be taken at the educational system, its curricula and pedagogy, to see how or if they represented the goals of an eco-friendly development. They contended that the educational system in Egypt concentrated on teaching functional literacy and passing of information that did not benefit the cause of development or the environment. Hisham explained,

> *Education in Egypt did not deliver the benefits it promised. It did not provide students with the skills necessary to find dignifying jobs, it* [education] *was not their way to social mobility and the educational outcome is doubtful. There is nothing to help the students look forward to a future, any kind of future, nothing about development or the environment.*

Focusing more on the environment, Nermeen and Hassan addressed education's limited success in creating environmental awareness. They were equally concerned with the role of the media, religious institutes and informal education in promoting such understanding as well. While Nermeen was more concerned with awareness, Hassan put more specific impetus on awareness that was associated with acquisition of skills and positive behavior towards the environment. He summarized the status of education thus,

> *We have schools that need a lot of repairs, classes with 60, 70 and sometimes more students, some of the students don't have access to an adequate meal, we have teachers who are underpaid and burdened as well. Add to that the curriculum, we will find unnecessary information telling us about the past... There is nothing about today and the information about the environment, if any, is presented in a way that deals with it as a separate issue.*

Also addressing schools, Nermeen pointed to the atmosphere of the schools, attitudes of the students in relation to the content. She elaborated,

> *The schools have become social clubs, a place where the kids can talk about fashion, latest brands, their holidays abroad and singers. The educational content is not enough to provide them with the necessary information to create environmental awareness.*

It was interesting to notice that in their description of Egyptian schools, Hassan and Nermeen both described different schools of different status and control. Hassan's reference was to publicly funded schools with low socio-economic students while Nermeen's description fits private schools in high socio-economic areas. The curriculum taught in these schools, however, is the same.

Reflecting on the students at the Faculty of Education, the participants made connections between the students' attitudes toward the environment and the political atmosphere, in general. Hisham and Nermeen shared the opinion that the political atmosphere was healthy, in general, and lamented that students did not have the freedom to say and express their thoughts and opinions openly. Nonetheless, they presented different reasons for the students' silence. Nermeen attributed it to "... fear in general or fear of ridicule from colleagues ... or discomfort or feelings of alienation or lack of self-worth." She also pointed to the physical environment of the Faculty as well as the different needs of students.

> *Students come to a crowded place. They sit in a crowded or even suffocating small lecture rooms, some of them worried about how they will go home and others even worried about getting their basic needs.*

Hisham, on the other hand, drew attention to the responsibility of professors in helping students speak freely. He argued that the students were political to the extent that their professors wanted them to be. Reflecting on his daily lectures, he was convinced that "...creating a healthy environment for debate in any issue and in all issues is a key to people's participation, not only for the environment but for other social issues as well." He was also convinced that the political climate meant more than freedom of speech:

> *They* [students] *are political by words. ...It is very easy to criticize but very hard to get the people* [who criticize] *to act, to change or be change agents. When I am able to help them translate these thoughts into action, they will be contributing members to their societies. They will be participators in the betterment and improvement of the society and this is by all means a political act even if we do not want to label it as such.*

Nermeen, Hassan and Ayman all agreed that participation was imperative to the success of development. They, however, had different opinions when they tried to analyze the reasons for the absence of participation or the reluctance of people to act. Nermeen attributed it to the change of people's values suggesting that "people see participation as inferior, that it is the job of the government to clean up even if they were contributors to the problem." Hassan pointed to another dimension of the lack of students' participation echoing Hisham's opinion in regards to the responsibility of Faculty members.

> *Students can talk in vain but nobody listens. They need somebody to listen to them, to be patient, to encourage them to speak freely, to point them to the right direction, to help them become active members in their communities and schools. We should help in lifting them from the state of carelessness and lack of belonging.*

Ayman identified with all the previous opinions but argued for a critical look at the relationship between people's change of values and lack of participation: "... values are not the cause of people's reluctance to participate. It is the other way around." He argued that it was a chain reaction that was started by "...an oppressive political climate."

> *Imagine when people are not given the chance to participate in the decision-making process; their opinions and/or needs are not taken into consideration or they are kept in the dark. The outcome is that they will feel unimportant, worthless and that no one cares about them. The outcome will be that they will not care to participate any more. The environment will not be on their list of priorities and it is not. They do not feel appreciated or valued, why then would they help out?*

Addressing the role of the media, the participants agreed that it had a negative effect on the environment. First, Nermeen and Dalia pointed out that the media played a big role in creating a connection between Egypt and the rest of the world. While Nermeen focused on "...Egypt's ability to make use of appropriate values and ideas transferred to us through that connection," Dalia cautioned about its dangers,

> *Although one cannot deny the importance of being connected and knowing what goes on in the world around us, you present them* [Egyptians] *with events but you also present them with lifestyles and values that are alien to, or not fit for, our society and development needs. You don't give them a manual to tell them how to react or what is good or what is bad in what they see. Yes, the world is related but it is not always a good relationship.*

Together with the rest of the participants they argued that the media did not exert enough effort at covering environmental problems and issues in Egypt. The participants, in general, criticized the media's limited view of the environment arguing that it was presented as a separate issue without consideration to its connection to other issues. Hisham and Dalia stated that the media did not address the relation between development and the environment. Ayman extended the view arguing that "... the connection between the environment and health is also absent." Nermeen and Hassan supported the others' opinions claiming that the main problem is the media's limitation of the environment to the natural sources. Nermeen explained that "...it [the media] does not pay attention to the connections between the natural environment and our social environment." Hassan echoed the same view elaborating that

> *...they* [the media] *don't have an understanding for the environment and its worth. They also lack a holistic or comprehensive view of the environment as encompassing the natural, economic, and social aspects altogether.*

The participants also affirmed that the media's coverage of environmental problems was limited. Ayman and Dalia wondered if there was any environmental coverage on television. Eman clarified that "... newspapers with its incredibly limited coverage is way better than television." Nermeen supported his view but added that "whatever is there is not enough to create the needed environmental awareness," while Hassan labeled the media's coverage of environmental issues in any of its forms "pathetic." Together with Hisham, he challenged "...the percentage of environmental coverage to exceed one tenth of a hundred," and Hisham affirmed that "the amount of coverage is meaningless."

> *The time and/or space alluded to the environment is miniscule. Add to that the kind of coverage. Media covers disasters, Chernobyl, floods, typhoons, etc., but pays little attention to every day problems that have accumulated over the years and became disasters of their own.*

Eman and Nermeen added that the media was quite selective in what to cover "A disaster in a North Country takes precedence over one in a South one," Eman noted. Nermeen extended analysis of this prejudice, arguing that "the coverage differs according to the location of the event, urban takes precedence over rural and even within the urban-rural distinction there is still discrepancy in the coverage."

Addressing the nature of the coverage itself, Hassan, Eman and Ayman affirmed that the limitation extended to the way environmental issues/problems were being covered. Addressing environmental coverage on Egyptian television, Eman urged for a differentiation between regular programs addressing the general audience and other more specialized programs addressing professionals. She however criticized both. "The first is usually very superficial and done in an uninteresting way that they lose audience and the other is usually very complicated that again they lose audience." Nermeen, meanwhile, argued that the outcome of such programs was unclear.

> *Any program on television should have a goal or an objective whether educational, entertainment, development or anything else. If I watch any program, I should be able to know what I have benefited from the program and not that I have wasted 30 minutes or more of my time as usually happens.*

Ayman asserted that "the goal of media's coverage of the environment was obvious."

> *This is not coverage of a deteriorating environment geared toward saving it but one that is geared to depleting it and polluting it. Whether it was a deliberate goal or not is another question. The media promotes values that are incredibly harmful and threatening to the environment, consumerism, and individualism.*

Hassan, Eman and Hisham explained that the promotion of these values could be "...deduced from the contradiction between the environmental message if it is there and all the advertisements blurring people's vision urging them to buy without any consideration to the effect on the environment," as Eman explained.

While most of the participants' views were geared towards television, Hassan pointed to the role of newspapers in covering environmental problems in Egypt arguing, that the difference between television and newspapers was "unnoticeable."

> *Newspapers have more space for explanations, reports and analyses. Yet, the coverage of environmental problems and issue does not exceed a few lines. The coverage is also superficial and also harmful in the amount of advertisements that are geared toward self-interest and material ownership.*

Hisham also pointed to the role of radio arguing that it was "the greenest of the media."

> *While radio might not necessarily promote the cause of the environment, it is still the least harmful. The nature of the medium needs more attention so more often we can find meaningful programming. In addition the amount of advertising on radio is way less without having the sensation of the vision to add to its effect.*

Within the discussion of the relation between development and environmental degradation in Egypt, Nermeen and Ayman each mentioned an additional dimension that was not referred to by any of the other participants. Nermeen pointed to the pressure that population growth put on resources and development,

> *...the people who have kids argue that it was nobody's business but they are mistaken. It is the government's business to feed them and provide education and services for them. It adds to the problem of unemployment and puts tremendous burden on the resources and therefore adds to the pressure on the environment.*

Objecting to Nermeen's concern, Ayman asserted that the population problem was "one other way for the rich countries or the rich in general to blame the poor for a problem [environmental problem] that they have caused." He explained,

> *We don't have a problem of lack of resources but lack of justice. If we have fair distribution of resources we wouldn't have a problem.*

Addressing the other problems that Nermeen referred to, he was the only one to mention the importance of the use of "appropriate technology,"

> *In a populous country like ours, we don't need hard or sophisticated technology to develop whether it is industry or agriculture. We could have relied on technology that is appropriate for our needs or labor intensive projects; projects that involve people rather than resorting to technical fixes. We definitely don't need foreign values to tell us what to do.*

Bringing into the discussion the role of the government, the participants addressed the planning and implementation of development. In presenting their views, they seemed to bring all the dimensions of development together and make general comments about them. Eman, Dalia, Nermeen and Hisham pointed to the "centralization of development" as the main problem. Hassan referred to it as "the top-down model of development," while Ayman called it the "vertical model," and Hisham drew in the global connection as well.

The development model adopted is made in Cairo, the center of everything. I would even say, it is made outside Egypt, 'mostawrad' (imported). We still have 'oqdet elkhawagah' (expression used to imply people's respect for things that are exported or ideas that have an international appeal rather than local ones). We did the same thing with development; we imported it without thinking that it might not be appropriate for our country.

Hassan and Ayman addressed the effect of the centralization on the environment as well as on the people. They both argued that it resulted in a difference in services as well as effects in different parts of society. Hassan compared development efforts in big cities to those in rural areas arguing that "…it has resulted in a discrepancy between services and environmental problems in favor of the cities." Ayman supported that opinion adding that "the governorate you live in makes a big difference." Eman pointed to the implications of differences in levels of services on the lives of people as well as on their environment."

> *The top cities get the cream and when it is time for the rural areas, they are often left with the problems. They have way more environmental problems that could have been prevented if they were given adequate services. It is like you extend the health of the rich but you have millions who are born into poverty and therefore do not have access to health services.*

Addressing the role of the government in development and its relation to the environment, Hassan asserted that the main problem lay in the lack of coordination between different sectors of the government and their often contradictory policies. Nermeen reiterated the same point arguing that government institutes were not working together. Together with Hisham, they gave an example of the role of different government sectors in getting environmental laws into effect. Hassan affirmed the importance of the coordination between education, law enforcers, civil society in the implementation of the laws, Hisham added the role of the media in creating awareness and Nermeen also stressed the importance of religious institutions. Hassan explained the importance of such coordination.

> *Without it* [coordination] *and without the cooperation of the people, all environmental laws, no matter how useful they could be, would become useless, you can just 'wet it and drink its water'* (an expression that usually refers to the uselessness of something).

Moving from the current state of development and its effects on the environment, the participants had different visions when it came to the future. Nermeen, Hisham and Hassan urged for a reexamination of the current model. Nermeen commented that "...it had done little to improve the living standards of the poor and much to destroy their environment, culture and at times even deteriorated their standard of living." They all affirmed the need to move beyond the orthodox development model to one that paid more attention to the well being of humans as well as take into consideration other related issues such as economic, human, environmental and social aspects. However, their views of what the priorities of a new approach to development should be varied considerably. The main goal of all visions revolved around improving the livelihoods of humans, but the way towards attaining that goal also differed. In general, Ayman, Hisham, and Hassan pointed to the importance of placing human welfare at the center of development plans. Ayman clarified that "development is development of the human being," Hisham supported his opinion arguing that "humans should be at the center of any development plan," and Hassan extended it further arguing that

> *... the royal door to conquering all problems is through the human being. To put human beings at the center of development plans means to take into consideration everything that affects, or is affected, by human activity. It means attention to their basic needs, their health, their education, their culture, their environment and the role of humans in planning and achieving all these goals.*

To attain these goals, all the participants acknowledged the need to move from a top-down approach to a bottom up approach. Nermeen, Hassan and Hisham, however, argued that there was a step to be taken before that. Bringing into the discussion the global dimension to development, they argued that there was a need for a development model that was not affected by external (political and corporate) factors. Hisham and Hassan pointed to the importance of liberation from dependency that was exemplified by Aid packages and foreign investments. Hisham explained that, within the framework of globalization, Economic and social reforms in Egypt were established according to needs of capitalist societies rather than real needs of the Country. Hassan added that "... this was done through creating dependence on foreign aid and technology rather than the mobilization of local resources." Together they affirmed that the outcome was the increased dependency rather than self-sufficiency. Closely related was Nermeen's comment that "he who does not own his daily food does not own his freedom." In addition to the effect of Aid and foreign investments she stated that "Egypt's economy is dependent on external factors beyond our control." She supported her opinion by pointing to the effect of the 1991-Gulf War and terrorism on the tourism industry in Egypt.

> *Tourists were instructed by their governments not to come to region. Also, after incidents of attacking tourists and after the Luxor massacre, the numbers of tourists are plummeting and so is the income coming from it.*

The three participants agreed that development should be reliant on local sources and resources rather than outer or foreign ones. The other participants held a similar view, asserting with Ayman that development should rely on "local options rather than on ready made solutions that might not be useful to the society."

They all pointed to the importance of participation of the people in the decision making process for planning and implementing of developmental plans. A few participants mentioned the words "true development" as a foreseen outcome of the participation of the people. Ayman pointed out that "true development is by the people and for the people and participation helps in assessing the real needs of the people." In accordance, Dalia stated that "true development is the fulfillment of the real needs of people," and Eman stated that "participation is a goal in itself." In addition, Nermeen argued that "it is one of the ways to ensure the decentralization of development."

Talking about "true development" gave us the chance to explore more what it meant to the participants. Their definitions of "development varied to a great extent. Ayman defined it as "the best utilization of available resources." While he acknowledged the environment and other components of development, his definition did not. Similarly, Dalia stated that "development is the development of humans, their needs and rights. Of course, we should take into consideration the environment but humans should always come first." Eman's definition was in consonance with the previous two defining development as "the alleviation of poverty and the fulfilling of basic needs. Sure, the environment is very important. In the process we would also have the chance to clean up the mess and take protective management measures." When I brought into the discussion the concept of 'sustainable development' the three participants seemed confused as to what it meant wondering if it meant continuous development.

Dalia pointed out that she "was not familiar with the term," Ayman stated that "it is probably one of those meaningless terms," while Eman said that she has "heard it but did not really comprehend it."

On the other hand, Hassan, Nermeen and Hisham acknowledged the concept and its importance to both development and the environment. Nermeen pointed that "sustainable development takes care of humans, animals, plants taking into account social needs and principles of equality. That's what true development is and that's what we need, the implementation of the principles of sustainable development." Hisham also pointed to the importance of the concept acknowledging the WCED's definition.

> *It has equity, development, environment, etc. The trick is how to have it in the real world. The importance is not the definition but what it implies and how it could be achieved. We can look into a definition that takes into consideration the uniqueness of every city, town and village. It is not a "one size fits all."*

Hassan agreed with both opinions but cautioned against the "over reliance on slogans and terms."

> *Yesterday it was modernization, today it's sustainable development and sustainability, who knows what's tomorrow. The important thing is not to be hung up on the terms and definitions but have real development. Development in itself is enough. It is a process that takes into consideration all being, humans and non humans, and guarantees their welfare in a dignifying process that adheres to the principles of justice and solidarity. We don't need anything else.*

Reflections

The participants were unanimous in their opinion that there was a strong positive correlation between development and environmental problems/degradation in Egypt. They were in accordance with a number of studies (Tolba, 1998; Al Qassas, 2000, El-Henawi, 2001) that attributed environmental problems to economic development and industrialization in Egypt. Although pollution caused by industrialization was one of the main points they addressed, some of them also pointed to the depletion of resources or using the environment as resource of raw material as another aspect of degradation. In regards to environmental protection the "Ministry of the Environment has embarked on an ambitious plan to enforce Law no. 4 for the environment. It pertains to pollution from different industries but also faces challenges." (Ebeid, 1998).

It is worth noting here, that the participants pointed to other environmental problems than they have mentioned in a previous section of this Chapter. It seems that the context of development brought forward other problems that they did not articulate when we were discussing environmental problems in Egypt. However, they wrongly stated that both Toshka and Northern Sinai projects (reclamation projects) did not have an environmental impact assessment studies before they started. Both implemented such studies as indicated by EEAA (n.d) and El-Henawi (2001) respectively.

The participants have also shown considerable critical knowledge of the complex relation between globalization, development and environmental problems/degradation arguing that it has negative effect on both development and the environment in Egypt. Their views are consonant with Al-Eisawi's view (2000) who cautioned that globalization was a process that allows the hegemony of capital over states thus, undermining their sovereignty and benefiting rich countries at the expense of the poor ones. He explained that unequal distribution of capital and the open markets benefit North/rich countries which can export their products to the South while putting a number of obstacles in the way of South countries products. Al-Eisawi also stressed that aid agencies were one of the manifestations of the hegemony of globalization.

The participants were also critical of the aid agencies role in development and the effects of their programs on the environmental situation in Egypt. Their criticism was consistent with studies (Gomaa, 1997; Trainer, 1985; Al-Eisawi, 2000) that stated that aid was used as an instrument of foreign policy. For example, Trainer (1985: 157) points out that "during its years of militant support for the Palestinian cause, Egypt had been entirely excluded from the PL480 program." Gomaa (1997) also stressed the use of aid as a carrot and stick noting that Egypt has been rewarded by a debt relief after its contribution to the Gulf war in 1991.

The participants opinions in regard to open markets were also supported by Abd-Elgeleel (2000) who cautioned against the danger of free trade on two fronts namely, environmental front and developmental one. He argued that different trade agreements are in favor of rich countries and TNCs while both developing countries and the environment suffer.

Moving from the economic component of development, it was indeed interesting to see how the participants collectively brought in different issues under the wider concept of development. Education, religion, poverty, political freedom and role of the media were weaved together in a compelling way.

While they addressed the need for an alternative model for development, it was also surprising that 'sustainable development' was only mentioned by three of them, while the others did not know what it meant. Seen through the lens of paradigms, it becomes apparent that their views varied and were to a certain extent contradictory. While they adopted a rather critical view of development in their reflections and emphasized the importance of people's participation, some of the participants' alternative definitions adopted the same models they have critiqued by putting more impetus on economic development. Three of them suggested that economic growth would solve the inherent problem of poverty and offer solutions to environmental problems. Although their previous reflections could be viewed as a shift towards a more critical or people-centered paradigm of development, their alternative definitions of development reflect more the principles and logic of the dominant modernization or globalization-from-above paradigm that has been critiqued by a growing number of analysts (George, 1976; Trainer, 1985; Toh, 1987; Clark, 1991; Brecher & Costello, 1994). In contrast, the remaining three participants shared views on environment and development that place them more consistently within the critical paradigm of development (including the New Environmental Paradigm) based on local/global justice, grassroots democracy, and sustainability.

CHAPTER FIVE

THEORY AND PRACTICE OF ENVIRONMENTAL EDUCATION IN THE FACULTY OF EDUCATION, HELIOPOLIS UNIVERSITY

Introduction

This chapter explores the participants' different understanding of environmental education in general and their practice of environmental education in the Faculty of Education. It also focuses on the participants' reflection on their action under the action research model adopted in this study. There are two parts in this chapter; (1) the narratives of the participants as well as the presentation of data from my participant observation of their teaching; (2) the reflections on the aggregate data of all the participants revisiting the research question, and their planning and action for the next stage of the action research cycle.

Difference between Education as Ta'leem and Education as Tarbeiah

It is important to differentiate between two meanings for the word "education" in the Arabic language. The first is '*Ta'leem*' meaning education which pertains to the teaching and/or learning and acquisition of knowledge and skills whether through formal, non-formal or informal means. The second is '*Tarbeiah*' meaning upbringing, which is more inclusive as it extends to the acquisition of values and fostering positive behaviors and attitudes as well. It is directly associated with the process of bringing up kids and, in the formal education settings, teachers are considered to be the natural extension to the parents' figures who are responsible for the upbringing of children. While they are two different words in Arabic, there is no equivalent to the latter in the English language. This differentiation is important before the discussion of the participants' understandings of environmental education as they refer to the distinction between the two terms. In this context we will use, where appropriate, "schooling" to refer to education as *ta'leem*, and "upbringing" to refer to education as '*tarbeiah*'. For example, the exact translation of the phrase "Faculty of Education" is "Faculty of Upbringing."

Participants' Meanings and Understanding of Environmental Education

Before defining environmental education, the participants defined the environment. They agreed that the term "environment" meant more than just the physical surroundings stating that the definition should include the social context as well. Nermeen incorporated the attitudes of humans towards the environment and Ayman extended those attitudes to decisions made by governments that affect the environment. Summarizing these positions, Hisham defined it as

> *...a holistic environment that is concerned with everything in this universe. This includes animals, plants, insects, humans and human relations with each other as well as their interactions with and effects on the other components of the environment. In short, nothing is left out.*

It is interesting to note that when I asked the participants for their definition or understanding of environmental education, they all made the distinction between education as schooling and upbringing and wondered if I was referring to a specific one. They all related environmental education (schooling) to the type of information the students acquire through different courses. They were also in agreement that environmental upbringing referred to a holistic approach that takes into account information, fostering awareness, acquisition of skills that lead to positive behaviors and attitudes towards aspects of the environment. Hisham compared the process to growing flowers in a garden.

> *The process of growing flowers needs a lot of effort and nurturing in a way and accordance with the goals of the gardener or what he wants. The process of education* (upbringing) *is quite similar. It needs a lot of effort to develop and foster the students' individual creativity and skills through deliberate educational process* (schooling is a part) *in accordance with the goal of the society.*

In Nermeen's words, "environmental upbringing is the process of continuous education (referring to different types of education) in order to improve or shape the attitudes of the human in dealing with his/her surrounding environment." Hassan's definition was in accordance with those previous definitions stating that environmental education (upbringing) was "... what stays in our behavior after we forget what (information) we have learnt." He contended that this was the ultimate kind of environmental care as "... it caters to the needs of both the physical and social environment." Ayman extended on that opinion adding, "it is also the transfer of everyday values and getting in touch with our culture and tradition." Reflecting on the way his parents, grandparents and ancestors used to treat the environment he added, "they were not conscious that this was environmental education, they just used their values. He was also in agreement with the rest of the participants who affirmed that environmental education in that sense was "the responsibility of all the different institutions in the country," as Dalia has stated. Eman and Dalia pointed to the role that the media should play in promoting environmental awareness while Hisham, Hassan, Ayman and Nermeen added the importance of the role of the mosques, churches, social clubs and political parties in the process. Hisham explained, "it is a problem that concerns all institutions, not only educational, whether they are professional or specialized in the environment or not."

All the participants agreed that education (schooling) was an important aspect of the wider notion of education (bringing up). However, in their distinctions between the two types of environmental education, they also noted the limitations of the former.

Ayman compared the difference between environmental education (formal education/schooling) and environmental education (upbringing) to the difference between information and actions based on that information.

> *One is going to be worth nothing once there is new information to replace it while the other keeps growing over time. As the* [Egyptian] *proverb says, 'knowledge is in the head not in the notebook'* (meaning when the information leaves the notebook and goes to the brain inside the head to act upon it).

On a similar note, Hisham described the difference between the two types as simple.

> *Two words: 'theory and practice' or 'rhetoric and reality.' While the benefits of theory are limited and its worth is assessed when it is put into practice and only then will it be refined and re-refined. It is a continuous process. Real use and contribution to the betterment of people beholding the knowledge about it. While theory is the information we get about the environment, it is the practical use of this information that makes it education* (upbringing).

Hassan also differentiated between the two terms of environmental education, (schooling/formal education) and environmental education (upbringing). He contended that "the first refers to the amount of information we gain and bank in our minds. For this information to be worth while, it has to be translated into a behavior." Nermeen also stressed the separation between knowledge and behavior arguing that "while knowledge means awareness, the state of the environment will not improve without acting on the basis of that knowledge and awareness."

Eman and Dalia also pointed to the distinction between the two types of environmental education arguing that the difference was "as obvious as the sun" as Dalia put it. Eman asserted that "education (schooling) is one that gives me information but not necessarily lead to action." However, they promoted the idea that environmental education (schooling and passing of information) was the main component in the upbringing process. Dalia commented that the "separation between knowledge and behavior doesn't mean that it is a problem of education (schooling)." Eman pointed to environmental education within the Faculty stating,

> *...environmental education courses* (referring to the two courses that he was teaching) *are a great example of the success that formal education can play in both promoting awareness and fostering positive attitudes towards the environment. They are a great asset in the process of educating* (upbringing) *the students in this Faculty to become teachers and educators themselves.*

However, Hisham emphasized that environmental education, besides being holistic, should also be

> *... liberating from poverty, oppression, disease, and abuse, everything that can hurdle one's ambitions and dreams... It is the choices that we make when we breathe, when we talk, when we watch television, when we read. All these choices contribute to the environmental education that we get and transfer to our kids, our neighbors and our students to carry on in their lives.*

Nermeen saw environmental education (upbringing) as essential to the health of the environment. But while she contended that the task or responsibility of environmental education (upbringing) lies primarily within the family or the social environment in which the individual lives, she also praised the role that the university or the educational system could play in teaching facts to students, In this environment, the individual is given the instructions to learn, what to think about, and how to act or react in relevant situations.

> *People should not be left to decide for their own, they have to be guided by decision makers and educators. Only after an extensive amount of monitoring their behavior should people be left to think and act on their own. Only then would environmental education* (upbringing) *be in effect.*

Among the participants, Hassan and Hisham acknowledged the important contribution of international discourse and agendas for environmental education, especially the Tbilisi conference and Agenda 21, to their understanding and worldviews. However, on the well known principle of global thinking and local action, there was a difference of opinion. Hassan strongly argued that it would be normally impossible to think globally about the environmental crisis while local environmental realities have not yet been resolved.

> *People would directly think of the paradoxes and contradictions in that situation. Talking about the ozone, the green house effect, global warming, Carbon dioxide emissions, and other unrelated problems when people are literally walking through garbage is ridiculous.*

However, he acknowledges that the principle of global thinking and local action is relevant when certain global or international environmental crises have a direct impact on the lives of Egyptian people. For example, in the Chernobyl case, "we urged people not to buy the baby formula, to ask questions and not to buy commodities exported from parts of the world directly affected by the disaster... Then and only then will people listen. You have to really build your case".

Hisham, on the other hand, saw this principle as crucial, not only in facing environmental problems but with facing other crises as well.

> *We are going to go back to the interdependence of the world. The issues are interrelated and the roots of one problem could start in India but we harvest its fruits here. This fruit could be poisonous and unfortunately, this is the case when it comes to the environment. Global thinking along with local action is a very important principle if we know how to utilize it. It should be used to make the people aware of the dangers heading their way environmentally, socially, economically and so on. Prepare them with solutions, how to face this coming danger, what is their role, how they can protect themselves and how to hold their fates in their hands.*

Although they acknowledged the international definitions of environmental education and their general benefits, Hassan, Hisham and Nermeen urged for an Egyptian definition of environmental education and its goals. Arguing that "we have to address the uniqueness of the place and cater to the uniqueness of the Egyptian identity," Nermeen emphasized that the Egyptian heritage showed "great respect to the environment... For example, in ancient Egypt, when a person died they would put on his grave that he didn't pollute a river or kill a soul." Hisham agreed, adding that

> *...after resurrection, the ancient Egyptian had to...*[also] *swear that he did not prevent the birds from staying in the temples. Entry to paradise was beheld on being kind to the Environment and its creatures. They also used to swear by the sun and there were a lot of sacred animals.*

They both stressed the importance of adding a religious component to any definition or goals of environmental education. Hisham backed his view by stating that

> *... religion is an important part of the lives of most of Egyptians. Whether Muslims or Christians, religion can play a major role in reforming or changing the people's attitudes towards the environment.*

Nermeen also addressed the same point arguing that

> *...it is time to abandon the phobia of religion and understand it for what it really is. Religion already plays a major role in the lives of the Egyptians so let it be an informed one.*

However they both stopped short from formulating a definition that would incorporate religious principles or listing goals that were unique to the Egyptian context. It is also interesting to note that Nermeen and Hisham did not mention other potential sources of environmental values, thinking and practices based on other cultural and social aspects of Egyptian society, such as the Bedouin and Nubian ways of life, and traditional farming culture.

Environmental Education in the Teacher Education Program: Personal Encounters

Before addressing the specific issue of environmental education at the Faculty of Education, it was imperative to explore the participants' general views at the macro level.

All the participants were critical of the educational system in Egypt. They used strong words to describe it stressing that the effects of such system were far from being neutral. In general, they described it as "one of indoctrination," as Hassan stated, "stupidification and oppression," as Ayman contended on different occasions, or "a system of no education" as Hisham put it. Hassan criticized the current educational system in universities and schools and other forms like the media, radio, television and newspapers heavily. In his view, the main fault of the educational system and people responsible for it is that "it did not make enough deliberate effort to create an aware human being, a human being aware of his rights and knows the dangers around him and able to defend himself". More specific to formal education, Dalia described the curricula that the students have to study as "huge". She added,

> *Most of the subjects are meant to be memorized. The value of learning is diminishing in comparison to the value of grades and credentials. A great onus is put on exams and marks.*

In regards to the environment, all the participants agreed that the goals of environmental education in Egypt were not explicitly stated. Hassan stated,

> *...they are a well-kept secret... I know them because I am directly working in environmental education at* (one of the environmental institutes) *and because of my work with the* (.......for Research) *and of course it is one of my interests as well.*

Hisham outlined some of his own goals for environmental education to be

> *...developing an understanding of the environment and its impacts on human life, an understanding of environmental problems; their causes and effects, respect for nature and other people, and positive attitudes towards the environment.*

Hassan commented that the goals of environmental education were not necessarily circulated or distributed from the Ministries to faculty members nor was there an evaluation technique to evaluate the courses or the performance of the faculty members. He added that knowledge of these policies and its influence on the teacher education program depended on the educators themselves.

Hassan categorized environmental education and/or awareness policies at the faculty as "limited and wanting," and argued that "the curriculum and the whole system of environmental education at the Faculty needed 'CPR'." He criticized the curricula of environmental coursers stating that it has been years since their last update. "There are about five editions of the environmental education textbooks. However, the only change each edition sees is the year on its cover." Furthermore, in his view,

> *...the current environmental curricula deal primarily with the outer layers of the environmental problems. It does not address the root causes of problems or even stimulates the students' minds and is done behind closed doors in lecture rooms where students only see the back of the head of the student sitting in front of them.*

Eman, Dalia, Nermeen and Ayman also affirmed that there were no clear guidelines for the courses at the Faculty. While "Faculty members are asked to provide a description of the courses they teach...in most cases they have the freedom to include whatever they want."

Content

There was no consensus among the participants as to the number of courses that were fully dedicated to the environment and/or environmental education at the Faculty. Dalia believed that they were "nonexistent". Nermeen pointed to her course as the only one that addressed environmental issues at the Faculty. Eman, however, explained that she was teaching two courses offered by her Department that were solely dedicated to the environment.

> *One is for the first year and one for the second year ... We mainly teach them about the concept of the environment, its importance, different kinds of pollution, how it affects their livelihood, and what they can do to reverse the effects.*

Hisham was familiar with these two courses but argued that they were not enough.

> *With this lack of courses on important issues, it becomes up to the discretion and judgment of the professor to teach about different issues... There should be a wider plan that targets the goals of education. Our courses should be under this umbrella and not operating on the basis of the professors' mood.*

He also stated that one of his courses has the potential to address a lot of different issues including environmental ones.

> *In this course, I give them lots of handouts, I urge them to read and present current and pressing issues from the newspapers and you would not believe how many of them choose the environment. However, this year I did not get the chance to directly address environmental issues.*

Ayman also pointed to the potential of addressing environmental issues in the same course as it is also one of the courses he was teaching. He explained that "the course was the perfect place to educate students about the interconnections of different issues and their relation to the students' future as teachers as well as their lives." Talking about his own practice, he contended that he has "...not made a personal effort to talk about the environment, but might include it as a compulsory part in future years". In addition, he referred to the environmental courses taught in Eman's department. He however, indicated that he was not familiar with their content or "...even if they are still offered."

Although Hassan did not teach courses dedicated to environmental issues, he stated that he makes the effort to link the contents of the courses he was teaching to the environment whenever possible. Hassan was also knowledgeable about the environmental courses stating that he had taught them before. In addition to the fact that these two courses were offered to elementary education students only, He was critical of their content stating, "I don't even categorize them as environmental education" to articulate their limitations. He contemplated that, in general, "environmental education in this Faculty is reduced to the ABCs of the environment." Hassan continued, asserting that "the educational system remains to be one of reproduction of teachers who oppress students and benefit from "the back doors of the school," (meaning the private tutoring business).

There was a difference in opinion as to what the content of environmental education included or should be. On one hand, Eman and Dalia referred to the content of environmental education curricula as the facts and the information about the environment that the students should be aware of before becoming teachers. According to Eman,

> *...environmental ... courses should teach them the basic concepts about the environment, what is the environment? What are environmental systems? What is environmental balance? What are renewable and non-renewable resources? When they have this knowledge they can then move to the meanings of environmental education and their role as environmental educators.*

Ayman seemed to agree with Eman's view adding, however, that the content of the curricula should be linked directly with the Egyptian context. On the other hand, Hassan, Hisham and Nermeen argued that there were three ways of classifying the content or curricula for environmental education. The first was to teach it as a separate subject dedicated to the environment. However, they stated that such a subject should not be taught in "vacuum", as Hisham put it. Nermeen elaborated that the positive effect of dealing with environmental issues as a separate subject would be limited. "For example, you can't separate development issues from pollution's effects; you can't look at waste and depletion problems without looking at consumption patterns, etc." Hassan and Hisham reiterated the same point. In Hassan's words, "environmental issues are not a luxury. They are tied to every aspect of our lives. It is directly connected to people's health, their quality of life and sometimes even quantity".

The second way of teaching environmental education was to have it integrated in/with all other subjects. The three of them argued that the interdisciplinary approach was the best way to emphasize the interconnectedness between the environment and the people's livelihoods. Hisham's opinion stressed that "the compartmentalization of disciplines was a major threat to education in general and to environmental education in particular." They agreed that the inclusion of environmental facts could be adapted to the content of any subject. Hassan explained that "in physics, for example, we teach them about sound, but we rarely talk about noise pollution and how the ears lose their sensitivity which result in partial hearing loss or even complete deafness." Both, Ayman and Hisham indicated that all courses have the potential of tackling environmental problems within their content. They stressed that there were core courses for all undergraduate students at the faculty that offer a great venue for environmental education. Ayman explained that "the importance of these courses lies in the ability of professors who teach them to adapt the content and cater it to the needs of the Egyptian context." Hisham added that "the strength of these courses crystallizes in their promotion of critical thinking and pedagogy".

Dalia however, partially disagreed with the relevancy of environmental aspects to certain courses like mathematics and courses that have the bulk of their work in laboratories. She explained "the results of experiments in labs have no relation to the environment. In addition, the field of mathematics for example is in a lot of instances abstract."

Hassan, Hisham and Nermeen pointed to extra curricula activities as the third way for environmental education at the faculty. This included field trips, symposiums, talks, newsletters, Student Union and student groups' activities. In addition, they referred to a few initiatives they have proposed to the Vice-Dean for Environmental Affairs and Community Development regarding environmental activities at the faculty. Hisham proposed organizing an adult education program for the community that would involve student teachers in their environment and utilize environmental problems in the illiteracy programs. Nermeen suggested a cleaning campaign for the surrounding area of the faculty. The activity proposed included different levels.

> *I wanted to design a questionnaire for the students to take to the people living around the faculty. Then the role of the students would have been to talk to the people and help them understand that this garbage attracts bugs and microbes that would affect their and their children's health. Then my role would be to go to the city council and talk to them and have them remove the garbage on timely basis and so on.*

Hassan also proposed a cleaning campaign for the faculty that would involve the participation of the students stating that

> *...when they invest effort in improving the place they spend four years of their lives on, they will make extra effort in keeping it clean. If we involve them in the process on continuous basis, we will help them in forming positive habits to take with them when they become teachers.*

However, the three participants stated that those initiatives were never approved by the Faculty's administration. While Hisham refused to share the reasons he was given, Hassan and Nermeen explained that lack of resources and the complexity of the activities were the main reasons for not pursuing the initiatives further.

Hassan pointed to the importance of involving the students in similar activities "even on a small scale". He pointed to the students' involvement in painting the fence of the Faculty. Although, he commended the activity, he pointed to its limited effect.

> *It is like ensuring that your front yard is spotless without attention to the mess inside the house. I have to put an effort in cleaning my house, in this case the faculty, before I care how it looks from the outside.*

Although Hisham was critical of the focus of student groups and the student union, he identified them as an important sector that could play an important role in environmental education at the Faculty. He elaborated that "initiating, planning and implementing the activities by the students themselves is a major strength point for these activities."

Hassan, Nermeen and Hisham pointed to the lack of collaboration between different departments within the faculty and/or faculty members as one of the main challenges in developing comprehensive courses dealing with environmental issues and/or integrating these issues into courses discussing other subjects. Nermeen explained the need for interdisciplinary collaboration by saying that

> *...environmental issues exemplify the interdependence and interconnectedness among a wide number of fields. Any environmental education curriculum would be limited without appropriately embodying such connections.*

Hisham and Hassan agreed with her opinion arguing that there were different reasons to explain the difficulty in reaching of the required levels of collaboration. Hassan listed three reasons as follows,

> *First, in general, we* [Egyptians] *are not used to teamwork. Second, the large number of faculty members makes it almost impossible to interact with other members outside your own discipline. Third, 'what you know is better than what you don't know'* (a proverb referring to people's distrust of the unknown). *Faculty members feel safer teaching information and the courses they have mastered, they are usually reluctant to engage in teaching new courses.*

Hisham expressed the same viewpoint indicating that "Faculty members became so accustomed to working alone" and extended his comments to include post graduate studies as well.

> *Even cross-disciplines co-supervision of Masters and Ph.D. students is not an established practice in this Faculty. Even though, having a co-supervisor or a supervisory committee member from different disciplines would definitely enrich the research.*

Hisham also added the personal interest of Faculty members to the list referring to it as a "great obstacle." He explained,

> *Unfortunately, it all boils down to 'business'. Having an interdisciplinary courses boils down to sharing the number of hours allocated to teaching that course, and the profit made of selling the textbooks.*

Reflections

All the participants conceptualized the environment in a holistic sense as being more than just the physical dimension. They also generally distinguished environmental education (schooling/ta'leem) from environmental education (upbringing/tarbeiah). Most importantly, there were differing emphases in terms of the role of institutions and agencies in promoting environmental education. A minority see formal environmental education as providing primarily "facts" and "information," while the others argue that it should play a major role in fostering awareness and transforming the values and attitudes of the students towards care for the environment). Hisham exemplifies the latter position when he noted that teachers are the ones who can bring about change in their students' behavior. He lamented that the Faculty of Education has become a place to get a university degree to get a guaranteed job rather than a place with a message or vision for transformation.

While schooling is more focused on information and knowledge and is less concerned with values, attitudes and behavior, upbringing is deemed to be more inclusive with its emphasis on values, attitudes and behavior, as articulated in the international declarations and documents on environmental education discussed in Chapter One and Two (United Nations, 1978; UNEP, 1992). In addition, the participant's views were also consonant with the arguments of several studies that environmental education needs to move beyond a narrow technical idea of schooling (Ibrahim, 1984; Hassanein, 1991; Selim, n.d.; El-Sayed, 2002).

With regard to the goals of environmental education, most of the participants agreed that these were not generally well known to the Faculty members, including themselves. Hassan and Hisham were the major exceptions in being able to articulate key goals such as those highlighted by Egyptian environmental educators like Ibrahim (1984), Selim (1993) and Egyptian Environmental Affairs Agency (1998, 2002). The goals they have mentioned were also in accordance with the goals of environmental education articulated in the Tbilisi conference (United Nations, 1978) and Agenda 21 (UNEP, 1992). The rest of participants did not mention any goals which illustrate a contradiction between the inclusive conception of environmental education that they have explained and begs the question whether they supported that meaning as an abstract idea rather than related to their daily practices.

Only two of the participants pointed to the importance of drawing insights from the practices of ancient Egyptian civilization for environmental education. It is interesting that the majority of the participants did not consider the relevance of the ecological wisdom of ancient Egyptian culture which has flourished around the Nile for thousands of years (El-Henawi, 2001; El-Gawhary, 1995). Another dimension of the Egyptian identity relates to the importance of religion in their daily lives, as those two participants explained. From a holistic framework of environmental education, it would have been important for all the participants to affirm the positive role that religion can play in environmental care. As earlier noted in Chapter One, national policies (EEAA, 1998; 2002) clearly endorsed the training of *Sheiks* or *Imams* (Muslim clergy) and Priests to integrate environmental concerns in their weekly sermons. Furthermore, the Egyptian identity is also shaped by a number of cultures that are specific to geographical locations (e.g., Coastal, Bedouin, Nubian, and Upper Egypt). Regrettably, none of the participants alluded to the positive environmental cultural practices and traditions of different groups that would give environmental education in Egypt a distinct and unique quality (Shararah, 1997).

The lack of agreement, among the participants, about the number of courses fully or partially dedicated to the environment explicated different characteristics and challenging aspects of the education system at the Faculty. Two of the participants did not know about the environmental courses, although they were explicitly documented in the calendar. Furthermore, none of the participants, other than Nermeen, knew that her course integrated environmental issues into its content. This could be explained partially because neither the course name nor its description in the calendar suggested this fact, and partially due to the limited networking between different staff members across departments. These two examples raised the need for a comprehensive knowledge base or continual updating of the calendar to communicate this type of information. However, maintaining an up-to-date calendar is far from easy, considering the large number of professors in the Faculty. Moreover, because students in the faculty choose programs rather than individual courses, many professors lose the interest to update the contents of their courses in the calendar. It is also clear from the data that the Faculty's level of implementation of environmental education does not reflect official visions or policies of integrating environmental perspectives in higher education courses (Shehab, 1998).

According to the results of the preliminary questionnaire (Appendix C), administered to select the research participants, a majority of the faculty members who responded claimed to address the environment in their courses. However, there is no other means of objective assessment, as "addressing the environment" highly depends on what the faculty member means by "addressing" as well as what s/he considered to be "environment." For example, while attending Ayman's classes, he discussed with his students how they would address environmental problems and help their students to think critically about them and find creative solutions to these problems. Yet, he believed that he did not address any environmental issues in his classes. It was obvious that this mode of discussion was "less than" what he considered to be addressing the subject.

Other than examining the textbooks, I used two methods to assess the content of the courses taught by the participants of this research. In the case of Nermeen, Ayman and Hisham, I attended some of the classes as a participant observer. Nermeen referred, where appropriate, to the link between environmental attitudes and social values, culture and traditions in rural areas. Hisham did not speak directly about environmental issues in the classes I attended, and Ayman addressed it once in the occasion mentioned above.

In Hassan's case, while talking with his students, two of them confirmed that he made a lot of effort in linking the content of the courses he taught to their daily lives. The students also seemed content with his effort, as Jihan (one of his students) put it "he doesn't only do that, he helps us to come up with the examples ourselves." Finally, both Dalia and Eman were reluctant for me to attend their classes as a participant observer. Dalia saw no merit in the process, as she confirmed that her courses did not address the environment in any way due to their abstract scientific nature. Eman, on the other hand, indicated that the entire courses were about the environment, but argued that "in Environmental Studies courses, you definitely have to address the environment in all the classes, and there is no need for further assessment"

In lieu of participant observation, Eman suggested that looking at the courses' textbooks and the students' term papers would give me a good view about the curriculum content. He claimed that the textbooks gave the required global coverage for the issues, and through term papers, the students linked the issues to the Egyptian context. However, in examining a sample of the term papers for one course, I realized the wide range of subjects addressed. Only a few of the papers discussed subjects beyond what was contained in the textbook and/or used references beyond what was listed in the textbook. Furthermore, the students rarely linked the paper topic to the Egyptian context.

With their stress on separate environmental courses based primarily on description of the problems, half of the participants can be seen to favor the paradigm of education *about* the environment that has been critiqued by scholars like El-Sayed (2002), Fien (1990, 1993) and Huckle (1987). Although the remaining three participants pointed to various different ways of implementing environmental education – as a separate course on environmental issues; by integration of these perspectives into a range of Faculty programs; and through extra-curricula activities - they preferred the inter-disciplinary approach in which environmental issues and concerns are weaved into different courses. As Foster (1999), Jones, Merit and Palmer (1999) and El-Sayed (2002) have advocated, this approach is more consistent with education for the environment.

Although extra-curricular activities seem like a natural extension to courses to reach students, some of the mechanisms the participants proposed were not that typical; namely through student groups and the student union. Background about the Egyptian context is needed to understand the viewpoint administered by the participants leading to these proposals. In all state-owned universities in Egypt, student groups need a supervisory faculty member in order to exist. Furthermore, Faculty administration typically has the upper hand in guiding and leading the activities of the student union. In general, these practices give faculty members the conviction that they can direct and steer students' activities in any direction they deem appropriate. This very nature of administering the activities of student groups made them suffer from the general problems existing in the Faculty such as compartmentalization. In an interview with Dr. Abdelhadi Kamel, the Faculty's Vice-Dean for Environmental Affairs and Community Development, he depicted a resistance to get students involved in environmental affairs, "student activities are not part of my portfolio, even if the activity is concerned with the environment." (April 15, 1998). The extent of this problem was confirmed by Dr. Alaa Elgohary, the University's Vice- President for Environmental Affairs and Community Development. In his opinion, "collaboration among staff members is virtually non existing and there is a very limited cooperation between different departments' administration in the university" (April 8, 1998).

Although the lack of collaboration was recognized by different sources as a general problem facing Egyptian Universities, they disagreed on the reasons. While Hisham named the "business interests" of staff members as the obstacle to collaboration, another non-participant instructor believed that the lack of interest and the lack of vision are the main reason. Dr. Elgohary also blamed the lack of interest among students for pioneering environment-related activities; "most of them [the students] are interested only in entertainment activities" (Interview, April 8, 1998). Dr. Samir AbdelMoez, the Youth Mentor/Leader at the faculty supported this viewpoint. Despite his role as a youth motivator, he was forthright in blaming the students, noting that "there is no interest between the youth in this faculty whether student groups or student union to address environmental issues in any way. However it is an important issue that we should address in the future" (Interview, Feb 23, 1998).

Hisham and Ayman blamed the general political atmosphere and different laws aiming at trimming the wings of the students for diminishing the scope of student activities to entertainment ones. However, this could also be attributed to the lack of profound interest among staff members as well as their busy schedules.

Finally, it is surprising that the knowledge base of the participants in environmental issues and problems was not significantly drawn upon in the curriculum content and instruction of their courses. Except for Hisham and Ayman, the others attributed this gap to the non-suitability of their courses for including in-depth analysis of environmental issues. Hisham expressed surprise and a measure of self-criticism that he was not taking advantage of the possible spaces for integration in his courses. Ayman admitted that he had not made an effort at integration but given the increasing importance of environmental education, he was intending to include environmental issues in the forthcoming academic year.

Pedagogy of Environmental Education: Personal Experiences (Practices)

The pedagogy of environmental education and in the case of this research pedagogy of teacher educators at the Faculty was a crucial part of my discussion with the participants. All the participants proclaimed that the pedagogy had a vital effect on the learning process. Hisham expressed it as the difference between a good professor and a good textbook. "They may give the same information, but 'How they deliver this information?' is the crucial difference." In a reference to the proverb he had mentioned earlier, Ayman contemplated that "pedagogy helps transfer information or knowledge from notebooks to the mind and into possible action." Furthermore, on a number of occasions, the participants placed more importance on the pedagogy than on the curriculum. As Hassan stated, "the message is important, but how I deliver it makes all the difference in the effect." Dalia also stressed the importance of pedagogy.

> *If we bear a memory of a good teacher, the memory is seldom associated with his/her course curriculum. It is usually connected to the part that touched our lives, the personality of the teacher, how s/he interacted with the students. In short, the way he/she taught the course.*

Despite this assertion, Dalia indicated that the nature of the course greatly defined the choice of pedagogy. Reflecting on her own practice, she eluded that she depended mostly on lecturing techniques to reach her students. She explained that "the nature of the courses mandated fostering of systematic thinking. In order to help students understand chemical reactions we have to rely on facts and figures."

Specific to environmental education, Hisham articulated three levels for the pedagogy of environmental education:

> *...emotional, awareness and action. The care for the environment is built at the emotional level; the awareness level is concerned with understanding the environmental problems and their connections and interconnectedness to other problems. Finally, at the action, or real participation, level, individuals get involved by actively participating in solving or preventing environmental problems.*

He ended his articulation with the statement that "the challenge we face is how to meet these three levels and/or move from one level to the next." All participants acknowledged the importance of these three levels in their practices. However, they indicated that they used different means to reach those goals.

Ayman believed that the most important aspect of pedagogy was to get the students to "literally talk". He rooted the problem to the years of oppression in schools, "students come into this faculty silenced by years of schooling." The central goal of his pedagogy was to "help students reclaim or develop their critical voice." To reach that goal he followed a continuing feedback approach. He illustrated as follows:

> *I need to understand their ideologies, how they're thinking and what they're afraid of. This understanding will help me in shaping my own pedagogy so as to help them in return to be critical thinkers who are capable of helping their future students.*

While Hassan and Nermeen agreed with Ayman that "getting the students to talk" was a crucial aspect of their pedagogy, they deemed the building of connections between the course subject and the students' daily lives as their central goal. As Nermeen clarified:

> *In my courses, I link the scarcity of fresh water problem to our personal habits and how we should economize in our fresh water use…While I rely on the textbook to gear the discussions, I enjoy engaging the students in dialogue to hear their points of view and what they think in regards to environmental issues.*

Hassan seemed confident of his success in "conscientizing" his students to the connections between the subjects he teaches and their daily lives.

> *Time and time again I engage them in discussions about the relevance of physics and chemistry to their lives. For example, the relationship between sound, noise pollution and the hearing sense.*

Hassan followed a more directive approach to engage his students in the dialogue: "I encourage them to share examples from their daily lives and propose how they would utilize these examples in the future with their own students." Despite his acknowledgement that building the students' critical thinking skills was an important goal of pedagogy, he was not sure if he has helped his students to think critically in regards to environmental issues.

Eman commented that "student communication (either spoken or written)" were the key aspects of his pedagogy. Her objectives were "to encourage them to talk and to speak their minds without fear". She acknowledged that lectures have limited capabilities to deliver her message. "I supplement them (lectures) by asking the students for research papers and require them to read and think." She further indicated that connecting "their papers to the Egyptian context" was a fundamental requirement. She called her approach the "open door policy. The underlying message was to encourage the students to formulate questions, to ask them and expect answers."

Hisham shared Eman's view about the communication aspect of pedagogy. However, he added the importance of helping students to "learn, speak and develop their own voice". The underlying concept directing his pedagogy was to "affirm that whatever they (the students) say is worth something." Hisham distinguished term papers, workshops and group discussions as the pillars of his approach. He also indicated that he has saved no effort to connect daily issues with environmental ones in previous years trying hard to assure that the message sticks to the students' minds. He provided the use of many "popular songs and parts of famous plays" as examples of his techniques. He sometimes asks them to move around the lecture room to maintain an "active mode" throughout the lecture. As specific examples to explain the essence of his pedagogy, Hisham indicated that part of his course was dedicated to discussing daily news. Students are asked on a regular basis to "read daily newspapers and analyze a few of the news that they see important and write their analysis". To monitor the effects of this routine, he samples a few of the students' analyses every class to share with the rest of the class, and some to read after the class. In his opinion, "you can feel the difference as the course progresses. They develop their own style and way of thinking". Term papers were another examples he used. "I ask them to write term papers dedicated to societal problems and how they can address it through educational units in a hypothetical course they are teaching." Hisham concluded that having a "liberating pedagogy at the Faculty is challenging but not impossible."

Hassan, Hisham, Ayman and Nermeen articulated that part of the challenge to teaching environmental education at the faculty was due to the absence of role models in the Faculty. They agreed that "a lot of the faculty members consider themselves as machines of information. They [the professors] see their capacity as role models and educators (parent figures) as fading, and their emerging new role is banking of information", as Hassan put it. Nermeen extended this point of view even beyond the Faculty of Education boundaries commenting that the role of educators in the classrooms and lecture rooms has been reduced to "dumping of information." She explained,

> *It is often the case that professors and teachers alike go into their classrooms and just keep talking for the duration of the class and leave.*

> *when the time is over. They don't interact with the students or address the subject at hand in any interesting way. We can replace them by tape players.*

Hassan pointed out the danger of this attitude as it reflects on future teachers and the way they teach to their students. "Teachers now act as if they are teaching specialized scientists rather than children at school." Ayman addressed the same concern saying

> *a position at the Faculty of Education has become just a job 'saboobah'* (an expression used to degrade jobs to just a way to make money). *The effects of the way they make that money on their students and, in turn, on future generations are rarely considered.*

Hisham put part of the blame on the personal interests of professors,

> *...Professors are preoccupied with selling textbooks and their research interests. They don't have time, effort or even interest to invest in improving their teaching techniques.*

Nermeen, however, laid the blame on the imbalance between the financial needs of the educators and their salaries. Nevertheless, she saw a way to overcome this challenge in emphasizing personal aspects such as "the religion and beliefs" on the teaching methodology as the required role model for future teachers.

Ayman also echoed the lack of interest among the educators, but also placed some of the blame on the lack of interest of the students themselves. He paraphrased his point of view using the proverb "teach the absent-minded all night, he will wake up forgetting what you have taught him"

Although the lack of role models among the Faculty members was seen as a significant problem, all the participants cautioned against putting all the blame on the shoulders of the faculty members. They attributed part of the challenge on the large number of students in lecture rooms. They indicated that large classes affected the way they taught. As Eman explained, "I have more than 750 students in one of my classes, how does anyone propose I teach this course, let alone becoming a role model?" Nermeen expressed the same concern stating that the large numbers of students were an impediment to education in all of its forms.

> *We lose about 15 minuets of class time for students to get to the lecture room, sit and settle down. If a student started a discussion, it becomes a license to others to chat. Due to the large number of students, professors find themselves resorting to class management techniques implemented in elementary schools.*

The lack of time to interact with students was another concern Ayman has associated with the problem of big numbers. He argued that big numbers impede discussions either within or after the classes.

> *To get a feel about the scope of the problem, calculate how much time it would take to give half of the 700 students, 30 seconds each, to talk during the lecture time, or to allocate 5 minutes a week to interact with each student.*

Although Hisham agreed that teaching a large number of students was a challenge, he anticipated a great reward in reaching out to a percentage of those students,

> *Imagine the difference you would make if you reached the hearts and minds of even only a quarter of your students. You know that you have made a change in their lives and feel that they will carry the torch on to their students.*

Dalia noted that the problem of large class sizes becomes exacerbated with courses that needed extra resources like laboratories, apparatuses and equipment. The rest of the participants elaborated on the lack of resources to be a challenge to environmental education at the Faculty. Eman criticized the Faculty for the absence of environmental kits that could help students to observe and research environmental phenomena. Nermeen and Ayman also lamented the lack of educational technologies such as computers, Internet and instructional materials such as movies to support environmental education at the Faculty. Nermeen explained, "we are still teaching with a piece of chalk and a board. Our style is not suitable for the era we live in; it is not fit for education in a changing world."

While Hassan and Hisham admitted that the lack of resources was a challenge to environmental education at the faculty, they urged for the search of "creative solutions" to the problem. Hisham explained,

> *a comprehensive solution to this problem is not in our hands as lack of resources is a general problem in Egypt. Yet, we have to find viable solutions to problems as they face us one after the other.*

He listed "educative field trips, guest speakers, symposiums and directed student activities" as examples of the "countless" options to face lack of resources. Hassan added suggestions like "getting them out of the lecture rooms, and sending them to exhibitions" to the list. He elaborated,

> *Instead of complaining about the lack of resources, we can fully utilize the best resource of all: Nature; we have to teach the environment in the environment. Students have to go out of the classroom to see the crime. Even in this faculty, they don't have to go beyond its fences. The crime is right here on the walls in the classrooms on the floor and everywhere.*

Although the participants had different stances in dealing with the challenge of lack of resources, they were united in their stand regarding the state of the library at the Faculty. While Hisham and Dalia commented that the state of the library was "a joke," Ayman referred to it as "pathetic" and Eman called it "poor." Hassan argued that the goal of reforming the environmental education cannot be attained if the library remains "weak". Elaborating on the same point, Nermeen stated that "we need a resourceful library that has periodicals and specialized books to maintain an up-to-date knowledge base in the different disciplines in the faculty." Ayman magnified the problem saying that,

> *we need to broaden the number of ideologies and philosophies of education existing in this library. With all my respect to John Dewey, we need to expose the students to the ideas of other educators and philosophers.*

Hisham considered the richness of the library, as explicated by other participants, as only a part of the deficiency. He viewed, what he called "justice and equity to the students", as a complementary part to that deficiency.

> *Many of our students can't afford to buy the textbooks for their courses, few copies of all textbooks should be available at the library for those students. Forcing all students to buy copies of textbooks is unjust, and professors enact necessary mechanisms to insure it.*

The physical being of the Faculty and its effect on the process of teaching was another manifestation of the challenges facing environmental education in the Faculty. Nermeen stated that "some of the lecture rooms at the Faculty are in a very bad shape; when it rains the water leaks through the ceiling." On a different dimension, Hassan criticized the state of the physical facilities at the faculty, "I can't comprehend teaching environmental issues in dirty or filthy lecture rooms." The other participants agreed with this observation commenting that, as Eman puts it, "the whole Faculty needs to be washed with soap and water". Hisham added another concern that was directly related to his teaching techniques,

> *While lecture theaters are large enough to accommodate large class sized, classrooms at the Faculty are designed only to fit the traditional teaching techniques. It is not easy to divide the students into groups during activities.*

Reflections

Among the three participants whom I was able to observe in their teaching, there is a common thread in their concern over how they can effectively engage with their students in dialogue. From my observations it became clear that while Nermeen's use of 'dialogue' as a technique to connect the curriculum to the students' daily lives was apparently successful, her success to deploy it as a process that leads the students to connect the issues to their daily lives or express their opinions was not clear. Her efforts to engage the students in discussions were frequently faced with limited interest from the students' part, as only a few of them engaged in such discussions.

Ayman's efforts to get his students to "literally talk" seemed quite successful. He stimulated a lot of discussions in his courses, by creating friendly atmosphere for interaction through his lectures and by accepting criticism. The discussions, however, stopped short of opening a two-way communication path between him and his students. In most cases, students were replying to his questions, expressing their feelings of helplessness and fear of the future. However, the discussions did not reach beyond criticism. No solutions or alternatives were generated leaving the students in a state of "confusion and disappointment," as a few of them revealed to him. When I addressed this concern with him, he argued that

> *...there no time to go beyond being critical; we have to focus on that. This is the first step towards finding the solution. Sooner or later they will have to face the challenges and find solutions for themselves.*

However, this message was not always clear to the students as one of them criticized him by saying that "you are always critical, I feel that you hate this country. Sometimes, I even feel that you are not Egyptian."

In the case of Hisham, the high attendance rate and high levels of student participation suggest a positive response to the space he gave to discussions in his lectures. He managed to create a positive attitude among the students by encouraging hope and "value of small steps" and urging them to "celebrate small victories". During the discussions, he allowed students to question him and each other and debate the issues. He sometimes offered solutions or pointed to a route that might solve the problem they are debating, and sometimes, he directed the question back to them to come up with a solution that fits their situation. My participant observation further showed that Hisham was very accessible and welcoming to his students who often consulted him in his office. In sum, Hisham, like Ayman, had a more critical approach to engaging with his students in dialogue than Nermeen who seemed to show a more superficial strategy.

Many of the participants pointed to the "disappearance of a role-model" among Faculty members as a challenge to environmental education in the Faculty, if not the education system as a whole. My observations made me believe otherwise. Through my discussions with the participants, I came to the conclusion that they went beyond the "banking of information" role as Hassan had mentioned. The objectives of their pedagogy, their consistent effort to reach their students, the encouragement for the students to talk and express their opinions, and the "open door" policy many of them maintained are all indications that they were trying to be a "role model" for their students one way or another. Indeed, at least half of the participants expressed ideas and reflections on their teaching practices and processes which indicated familiarity and a level of commitment to principles of critical pedagogy inspired by Freire (1970, 1985) and advocated by scholars like Giroux (1988), Giroux and McLaren (1989), Shor and Freire (1987) and Mclaren & Leonard (1993). There were also determined efforts to teach in a participatory mode that facilitates dialogue, critical thinking and affective learning as promoted by peace/global education (Toh & Cawagas, 2000; Reardon, 1988; Selby & Pike, 1999). The pessimistic view shown by some of the participants can be attributed though to the monumental challenges they face day-in and day-out while teaching their courses. This conclusion, however, does not close the window for improvement. It only asserts that the "lack of interest" was not a problem with my research participants.

Although different participants addressed different challenges, the aggregated data could be seen as a holistic list of challenges facing all Faculty members whether they accrued the same weight to different challenges or not. The list included the large number of students per class, the sate of the library and physical condition of the teaching facilities at the Faculty. From my observations, it was obvious that items of this list represented a challenge to environmental education in the Faculty. It is not easy to promote a positive attitude towards the environment in a lecture room that is so dusty to the extent that cleaning the seat before sitting on it was, as I observed, a common practice among students. It is also challenging to debate environmental issues in a lecture room that cannot accommodate all the students registered in the class to the extent that many of the students had to either bring their own portable chairs or stand through the whole lecture.

I did not personally assess the holdings of the library. However, Dr. Shokry Abbas, the Vice-Dean for Postgraduate Studies (also responsible for the library), acknowledge that the library needs a lot of improvements. Nevertheless, he stated that the library was in a process of continuous improvement: "we are in the process of updating our references, adding new technologies, like computers. It will always be an on going effort, and we definitely need the help of all faculty members" (Interview, March 30, 1998).

Although the ultimate goal of the pedagogical practices exercised by the participants was to prepare the students with the proper tools to engage their future students to "actively participate in solving and preventing environmental problems," students did not feel the need to transfer these experiences to their future students. The students own experience as "school students" was a major obstacle that was not explicitly mentioned by any of the participants. Answering Ayman's question, "how do you help your students be creative in addressing environmental issues?" one student answered that the first thing he would do was to bring the class to "conformity and discipline." The student elaborated, "first, I have to teach them to [blindly] listen to what I say. I would choose the biggest boy in the class and hit him in front of all his classmates as hard as I can. Only then, I can ask them to be as creative as I want." To this authoritarian view of pedagogy, Ayman replied that "you were oppressed as a student, now you feel it is time to oppress your students. You are going to oppress a whole generation." The point of view represented in the student answer is far from being an isolated case. In an interview with the Minister of Education, Dr. Hussein Kamel Bahaa-El-Deen, he confirmed that despite its spread in Egyptian schools, corporal punishment is a real problem that needs immediate attention. In his words, "I will not tolerate corporal punishment'; any teacher who uses it will be severely reprimanded, suspended or even fired." Furthermore, in Ayman's opinion, part of the problem in this regard is that parents usually do not object to the practice in fear that their children may be further victimized in their grading. In sum, while implementing environmental education, there is a need for parallel initiatives in education for conflict resolution and programs that seek to build in Egyptian schools a culture of peace and nonviolence (UNESCO, 1995; Toh & Cawagas, 2000; Conflict Resolution Network, n.d.).

The separation between schools and the faculty diminishes the value of the pedagogical practices taught and exercised at the Faculty even more. Most of the Faculty members have never been school teachers before, lessening the perceived value of the solutions they offer to their students. The opposing stand frequently assumed by the cooperating teachers of the practicum period does not help as well. In order to get student teachers to adopt their style of teaching, they usually call schools the "real world", implying that what was taught at the Faculty is fit only for an 'imaginary world'. While this barrier goes beyond the context of environmental education and applies to all programs in the Faculty, this finding suggests a need for Faculty administrators and staff to re-examine their institutional structures and policies, including strengthening the professional capacities of their staff in the field of Teacher Education; closer collaboration and dialogue with the school system and teachers to critically bridge the divide between the two "worlds".

Evaluation

All the participants agreed that evaluating the effects of the environmental education curriculum and the professors' performance was the final key step towards building a continuously improving environmental education program. They named three levels of evaluation as prerequisites to improving environmental education at the Faculty: curriculum, professors (Faculty members) and students.

Starting with the curriculum, Hassan stated that "courses for the environment should be deconstructed and reconstructed." He urged for a continuous assessment of the courses' curricula arguing that "textbooks prepared for courses of the environmental studies only scratches the outer surface of the environmental concerns of our era." In addition to the course content, Ayman also advocated for the assessment of the values promoted by these courses. "We should evaluate how these courses promote positive behavior towards the environment and encourage the students to think critically."

Moving to the evaluation of Faculty members, Hisham and Eman stressed the importance of institutionalizing mechanisms for evaluating the courses as well as the performance of the Faculty members delivering these courses. Hisham endorsed the benefits Faculty members could harvest from such feedback to examine their own practices and consequently improve them. Reflecting on his practices he added, "at the end of each course I ask my students to evaluate the course and my teaching technique. What they have benefited from it? And what could be improved?" Similarly, Eman stated that she pursued the same practice for both of her courses.

Although Hassan agreed on the importance of evaluating Faculty members, he warned against the complexity of the process. "We will go back to the problem of numbers. We are talking about polling the opinions of 25,000 students each year." He pointed to the cost and difficulty of administering such a process as a reason for raising opposing voices among the Faculty administration. Ayman also attributed the lack of acceptance of Faculty members of criticism from students as another reason for opposition. In his view, "many of the staff members are from the old school; they don't take criticism, especially from their students, with a light heart. Consequently, I highly suspect that many of them would oppose the idea." He also referenced the "culture of fear" promoted by the education system in general as a "point of caution" towards interpreting the results of such a process.

> *No matter how hard we try, very few students will express their real views in regards to the performance of a faculty member. I personally, guarantee that more than 90% of the evaluations forms, if they were ever administered, would be positive.*

Evaluating the students' performance was named as the third level of evaluation. However, the participants explained that the criteria used for evaluating the students were limited. As Nermeen elaborated, "we mostly rely on one method and one method only, exams. Students are mentally geared toward exams. They target certain parts of the course to study in order to pass the exam." Dalia, Eman and Ayman addressed the same point stating that credentials and grades were the students' main concern regardless of what they learn. Ayman clarified that

> *... the number of students attending lectures increase exponentially right before midterms and towards the end of the term. Lots of students come to ask and wonder what they should 'target'. They put it nicely like, what do you think I should focus on more?*

Hassan reasoned that the students focus on exams was a natural consequence to the education system in Egypt. As he puts it, "the system stresses the importance of grades, credentials, and at the end the certificate. We can't really blame the students." Hisham debated the above position, saying that "exams are not the problem, the skills we test in the exam are." He argued for the need to change the focus of exam questions from mostly testing the memorization skills of the students, to testing the students thinking skills and creativity. "This would rid us from the students' sole focus on targeting and memorizing parts of the textbooks and redirect their attention to thinking critically about linking what and how they learned here to what and how they would teach to their future students." Nermeen affirmed Hisham's point by noting her disappointment at the students' reaction to a mid-term question on the effect of the Luxor massacre on Egyptian society. "Students complained that they did not expect such a question, it was not one of their targets", she exclaimed.

Hassan stepped back to voice his concern about the lack of evaluation techniques and follow-up mechanisms on how the students in the Faculty benefit and/or utilized what they learned in environmental education, if any, during their practicum periods and in their career as teachers. He stated that answering the following question should be the focal point of any evaluation technique for the environmental education in the teacher education program at the Faculty. "Would these student teachers be keen and capable in engaging their future students in environmental education activities and improve their attitude towards the environment?"

Reflections

The participants all agreed that a major obstacle to effective implementation of environmental education lies in the priority given to credentials and grading in the educational system, including universities. There is no attention paid to the importance of critical learning, including values and skills of critical thinking and application to personal and institutional transformation of at least their future schools.

This finding is also reflected in the behavior of the Faculty's students who were not convinced that they needed teaching skills. They stressed the importance of the knowledge of their area of curriculum specialization to be transmitted to their future students. Hence, they would not study any material if it is not specified in the curriculum content. As Hassan, Ayman and Hisham noted, students would not address environmental issues if these are not formally prioritized in the syllabus set by the faculty member responsible for coordinating the large courses in the Faculty.

Most of the participants also called for a review of the curriculum for environmental education. They agreed that considerable elaboration and updating of the currently available textbooks needs to occur, a view that has been affirmed by UNESCO (2002) in their recent assessment of higher education learning material in the Arab world. Furthermore, one participant also emphasized the need to gear the curriculum to practices relating to caring for the environment.

Other Challenges beyond the Faculty

According to the participants, the "separation" between the Ministries overseeing the Faculty and schools undermines their efforts in implementing environmental education. There is no coordination as a result between what the Faculty is attempting to do in the teacher education program and what is happening in the schools. For example, the ad hoc premature closing of schools for the purpose of examination revision meant that the student teachers could not undertake their planned practicum, a problem that, as later detailed, affected my observation of student teachers during the action research phase of the study.

Another significant challenge raised by some of the participants (Hisham, Ayman, Hassan) was the quality of Egyptian public schools, namely the huge class sizes, lack of teaching-learning resources, and very low teacher salaries. According to Ayman, "co-operating teachers are also faced with the same problems we face here. These things lead to their feeling 'why do I care'?" Furthermore, even though student teachers are encouraged to "teach critically and celebrate creativity, they are not shown how to effectively do that in a class of 50 or more".

In addition, Hassan raised the problem that "a lot of the faculty members at the Faculty here have never taught in schools. They were never faced with real students (in schools) so the solutions taught to our student teachers are often limited. They don't address the real everyday concerns (faced by schools and teachers)". This challenge in turns means that the environmental education being developed and taught in the Faculty may lack the context, groundedness and relevance to school-based teaching and learning.

A number of the participants also mentioned private tutoring as a challenge stemming from the general educational system that affect environmental education at the faculty. Although public education in Egypt is free, its hidden costs lie fundamentally in the costs of private tutoring that has become a widely acknowledged reality. While private tutoring is considered illegal, it is a well-established industry in Egypt of about $14 million a year (statistics not official). The exaggerated onus put on exams and grades from the students' side, coupled with the low salaries of school teachers provide the foundation and structure for the tutoring industry.

Although the relationship between private tutoring and environmental education at the Faculty of Education seems remote, a salient and complex relationship between them was asserted by four of the participants. Hisham, Nermeen, Ayman and Hassan affirmed that the private tutoring business had an effect on the quality of education, including environmental education, at the Faculty. In addition to the guaranteed job after graduation, Hisham added becoming "... a private tutoring emperor or ...[being] ... among the lucky ones who earn teaching contracts in the Gulf region" as the main reasons for choosing the Faculty of Education for tertiary education. Hassan and Ayman agreed with this view. As Ayman put it,

> *... the quality and pedagogy of education takes a few steps back to the mastering of the contents of the courses. Competency in the specialized courses opens the doors for being highly demanded private tutors.*

To a certain extent, Nermeen and Ayman saw justification in the position taken by teachers and student teachers. With simple calculations, they both explained that the salary of a teacher was "far from fulfilling their basic needs" as Ayman commented. Nermeen elaborated the same detail by pointing to a television program that hosted a nine years old child and a teacher where the first earned 15LE a day and the teacher complained that his daily wage did not exceed 6LE. Nermeen and Ayman viewed this detail as a major challenge facing environmental education at the Faculty. Ayman confirmed that "improving the livelihood of teachers and increasing their salaries is a prerequisite to any reform in this Faculty, including environmental education." Nermeen also assured that "...until the financial issues of the teachers are addressed environmental education in the Faculty and in schools, if present, will fall on deaf ears." In this sense, they felt that their efforts to reform or improve environmental education at the faculty will fall short of its goals.

Hisham and Hassan agreed on the complexity of the problem. They concluded that improving teachers' salary structure was the solution. Nevertheless, they confirmed that improving the whole system was not plausible in the foreseen future. They adapted a more positive approach towards the problem, by confirming the possibility of spreading environmental education on a small scale. Hisham explained,

> *I believe that within this great population of students at the faculty there will be a percentage that will be willing and will carry the torch for their students. We have to make them aware of environmental issues, instill the value of critical thinking, problem solving skills and transformation in them. We have to help them find their voice and believe in their self-worth so they can help their students in the future.*

Extending on Hisham's point, Hassan added "even if the student teachers become private tutors in the future, they can still transfer positive environmental values to their students."

Reflections

According to the participants, there are ongoing organizational and bureaucratic obstacles to the effective implementation of environmental education, including the lack of coordination between the Faculty of Education and the Ministry of Education responsible for basic schools. Another significant challenge raised by some of the participants was the quality of Egyptian public schools, namely the huge class sizes, lack of teaching-learning resources, and very low teacher salaries. While at least one participant felt somewhat discouraged about the lack of capacity of the student teachers to teach critically and creatively in large-sized classes, I am more hopeful that other participants' ability to employ participatory pedagogies despite huge enrolments can serve as role-models to their student teachers.

Furthermore, the challenge posed by Faculty members not having previous teaching experience in schools has significant implication for implementing environmental education. If student teachers are not being oriented to a complex understanding of the culture of schools, then their approach to teaching about and for the environment may not be appropriate or relevant to the school context.

Private tutoring is a problem that extends way beyond environmental education; "it is threatening on more than one level of reform" (Shaker 2002). In addition to the salient resistance to changing the status quo from tutoring emperors discussed by Shaker (2002), private tutoring jeopardizes the whole lattice of values that is supposed to be instilled in the education system. Once the student becomes a source of income to the teacher, the teacher's capacity as a role model or a parent figure is threatened. The feeling that "I am your source of income" gives the student the upper hand in the process and in extreme cases pressure the teacher to tolerate actions and behaviors from this student that would not be tolerated in normal situations. Furthermore, in order to assess the value of the service they are paying for, parents are usually fixated on monitoring their children's grades and credentials, thereby diminishing the value of learning in favor of grades and credentials even more (Nelson, 2001; Mina, 2001).

The Question Revisited

At this stage of the research, and in accordance with the agreed-upon plan, discussed with and accepted by the participants at the preparatory phase of the research, I shared the collective research findings up to that stage with each of them. I discussed with each participant, the aggregated data of the participants' knowledge and understanding of the environmental problems in Egypt and their causes. Aspects of the discussion also covered the participants' opinions as well as my observations regarding the definition of environmental education in general, the assessment of environmental education in the Faculty of Education and the challenges facing faculty members towards implementing an effective environmental education program in the Faculty in particular.

Although there seemed to be a consensus among the participants regarding the state of environmental education in the Faculty and the severity of the problems that they faced in their educational practices, they had mixed feelings in that regards. While Ayman was "shocked" with the results, Dalia and Eman expressed their discouragement by labeling the results as "disappointing" and "frightful". Nermeen called them "very dangerous" and expressed her surprise to the fact that there were courses, other than hers, dedicated to environmental issues. Hisham called the results "horrendous", and Hassan reflected by describing them as "depressing, but anticipated."

Despite the agreement on the severity of the problems, the participants were divided as to whom to assign the responsibility for the solutions. According to Nermeen, Eman and Dalia, the findings confirmed that it was a problem of the educational system in general, and that the only way out was through an authoritarian top-down solution. As Nermeen explained,

> *My job and my mandate is to help the students to learn; to help them realize their potential and set free their creative skills. I shouldn't be worrying about the condition of the lecture rooms, the condition of the library, or the lack of other resources. These things should all be taken care of as a prerequisite to any reform in the environmental education.*

Dalia agreed with Nermeen's position using the question "these problems are beyond what I can handle. How can I solve the problem of large numbers?" Eman likewise stressed that the professors had done all what they had to do, and that "nothing else could be done."

Another viewpoint maintained by Hisham and Hassan indicated the fragility of the above solution on the grounds of reality. Hisham elucidated that,

> *... the time needed for these things* [a top-down solution] *to occur could and would jeopardize the education of a few classes graduating from our Faculty, and consequently generations of school students in our country. At least it will mean maintaining the status quo.*

Hassan added sarcastically, "Die you donkey, till you get your food" (a expression used to indicate that disastrous effects could occur due to excessive waiting periods.) Hisham and Hassan were convinced that the problem would only get bigger by waiting for an external solution. Hisham indicated that "these problems will keep facing us everyday till the real awakening to the importance of these components to the education process. God only knows when this will happen." Hassan complemented the opinion by adding that,

> *...the problems will not go away by pointing fingers or waiting for an external solution. We can't afford to keep waiting for somebody else, or a magic stick to suddenly fix everything. There is room for improvement; we* (professors and teacher educators) *have to keep trying.*

Affirming that these problems increased the job burden, Hisham stated, however, that "it does not relieve us from our responsibilities towards our students."

Finally, Ayman observed some justification in both points of views. On one hand, he concluded that "fixing the bigger picture has to go hand in hand with the professors' effort to work with the students." On the other hand, he seemed to be more inclined toward Hisham and Hassan's position, "we have to keep trying. Losing hope is losing the future (pointing to the future of the educational system)."

Reflecting the findings related to the original research questions, the participants agreed that the data collected provided an adequate answer to the questions: What are the meanings of environmental problems? What are the teacher educators' definitions and understanding of environmental education? What is condition of environmental education in the teacher education program at the Faculty?" However, they acknowledged that the question "*How to improve environmental education in the Faculty*?" needed creative solutions. Eman, Dalia and Nermeen expressed their despair of finding a solution, in Dalia's words, "under the current circumstances of the Faculty and the educational system in general".

The other participants, namely Hisham, Hassan and Ayman, believed that the data collected indicated evidence of the need for more investigation to assess the scope of the problem and propose viable solutions that could work within the limitations of the current educational system. Hisham described the environmental education in the faculty as "a cycle or a chain," stressing that students comprised the largest and most prominent part of the cycle. "In order to improve the practices within the cycle (the environmental education cycle), the students' opinions and views need to be acknowledged". At this point he revisited the original research questions elaborating that the complementary question should address "how to close the circle of environmental education?" He elaborated,

> *How do I understand the students' points of view in regards to my teaching? And how to benefit from their evaluation in forming and improving my pedagogy as well as the way I tackle and address environmental problems in future offerings of the courses?*

Expressing the same point of view, Hassan asserted the need to reformulate the research question to address the needs of the consumers of the environmental education process, or "the most important element on the educational process, the humans - the students in this Faculty and the students they will be teaching." He commented that the data, "…although abundant, did not address the role of the students in the educational process and how they would operate when they become teachers responsible for their own students." In his newly formulated question, Hassan focused more on the evaluation of the environmental education process, as part of the educational process as a whole. His new question was

> *How do I evaluate the environmental educational process now so as to positively influence its reformulation or improvement for the future years? ... This question should be a part of an everlasting feedback loop targeting the improvement of the environmental education at the Faculty and consequently at schools.*

Ayman's opinion was in accordance with Hisham's and Hassan's as he felt the need to listen to and incorporate the students' voice. He commented,

> *...the students are always at the receiving end of the educational process. They should play a role in shaping the information they receive as they soon will be fully responsible for shaping the information they transfer to their students.*

Sharing the newly formulated questions with the rest of the participants spawned a difference in their opinions. While Ayman found value in both of them and was keen to engage in finding the answers to these questions, Nermeen, Eman and Dalia suspected the value and plausibility of answering them. On one hand, Dalia felt that the evaluation process was impossible. Nermeen and Eman, on the other hand, agreed on the potential of the evaluation process, but speculated that it would not lead to any beneficial results under the existing circumstances and conditions of the educational system as a whole.

In order to proceed to the next stage of the research, we (Hassan, Hisham, Ayman and I) agreed to reformulate the research question to become: "*How do we evaluate our* (participating professors) *environmental education practices? And how to benefit from the results of these evaluations in improving and providing pointers to the improvement of our practices in the following years?*"

At this stage of the research, Nermeen, Dalia and Eman refrained from being full participants in the action research phase. However, they expressed their wish to be informed of the research details, and to provide their feedback and comments wherever and whenever possible. Ayman, Hisham and Hassan approved the new arrangement stating that the input of those professors would only enrich the process due to their different backgrounds and interest in the environmental education process.

How do we evaluate our environmental education practices?

The process of finding answers to the above question was far from easy. We started the process by exploring the participants' (Hisham, Ayman and Hassan) views regarding what to evaluate, and how to evaluate it?

Ayman was preoccupied with evaluating the participants' teaching practices. In addition, he was interested in evaluating the extent to which the student teachers, after becoming teachers, actually utilize the teaching skills they have learned during their undergraduate years. Hassan, Hisham and Ayman were convinced that the role that Faculty members played in preparing student teachers was the most important part in the educational process. Hassan said "we are the linking ring between their lives as students and their lives as teachers. The importance of what we teach increases or decreases by how we teach them" Together with Hisham and Ayman, he expressed the importance of the teacher educators engaging in reflective practices. "Teacher educators should always be engaged in a cycle of examining their practices; with experience we know what works and what does not. And with changing times and changing students, our practices have to change". Hisham proposed more than one level of examining their practices. In his view, my participation in the research study provided another perspective on his practice. My observations of his and other participants' practices alerted him, for example, to pay greater attention to his evaluation of student activities in his classes.

Like Ayman, Hisham was also concerned with evaluating the knowledge transferred to the students in terms of environmental education criteria. He needed to know whether the students acquired useful environmental information through his course, and whether they acquired critical thinking skills through the "Educational Foundations" course. He selected these two courses as they were core courses in all programs in the Faculty in addition to their perceived importance. He affirmed that "these courses are among the most important courses, if not the most important, courses in the Faculty." Hisham was eager to examine the contents of the textbooks used in these courses in an attempt to find ways to incorporate environmental issues within them.

Hassan complemented these two opinions, arguing that the process included three elements, "...curriculum, professors and students." However, he proposed to focus the evaluation on the "environmental educational" courses. He expressed his belief that a comprehensive evaluation, which could lead to beneficial results for future years, should address the three components and put them "in connection to each other." The three participants agreed on those three components so as to "what to evaluate?"

The two techniques proposed for 'how to evaluate' were "...getting feedback from the students and analyzing the contents of the textbooks." Hassan reasoned that "to reach concrete results, we have to follow a systematic way of evaluation." In accordance with Hassan's opinion, the participants agreed on selecting independent analysis and polling as the two techniques to evaluate each of the three identified components. For the independent analysis, they suggested that I help in performing the bulk of the task to overcome the problem of busy schedules. For the evaluation of the curriculum, they decided on the content analysis of selected text books. They decided on "research observations" for the performance of the professors and students and agreed to poll the students' opinions regarding the curriculum and professors' performance and to poll the cooperating teachers' opinion regarding the students' performance during their practicum periods.

Content Analysis of the Textbooks

In order to start the textbook content analysis, we had to agree on the textbooks to analyze as well as on the analysis criteria. Hisham suggested the inclusion of the two textbooks used in the (-----------) Education courses. Although he knew these books "inside out," as he uses them on a regular basis for teaching these courses, he envisioned that "another set of eyes reading through the books would easier spot opportunities to include environmental issues." However, Hassan suggested embarking on the analysis of the textbooks for the (-------------) environmental courses, arguing that they needed vigorous updating and connection to contemporary issues related directly to the lives of the student teachers and their future students. He also reasoned that his seniority in the department would allow him to take concrete actions towards drastically improving these courses starting with the textbooks.

While Ayman agreed with Hassan's suggestion, he proposed to include the textbook for the (------------) Education course as an example of courses that had the potential of integrating environmental education within their contents. He also expressed the need to explore the extent to which collaboration between different staff members, Hisham, Ayman and Hassan in this case, was possible. The participants reached a consensus to analyze the textbooks for three courses, two related directly to the environment and another to education. The three of them were convinced that, as Ayman puts it, "...such assessment would lay the necessary foundation for the collaboration in designing of one or more courses for environmental education that would make use of different expertise".

The three participants agreed on the following criteria to be used in the textbook content analysis:

1. *Publication dates,* for the references used in the books. Hassan explained that as environmental issues were in a continuous state of change, either from the research or the regulatory perspectives "this criterion would give us an accurate, yet simple, indication of where the textbooks stopped in terms of the knowledge they offer."
2. *Descriptive versus Analytical*, the criterion is geared towards assessing the balance between the descriptive and analytical aspects of the books' contents. Hisham explained that

> *...descriptive parts contains the information we want to transfer to the students. Analytical aspect, however, include, root cause*

> *analysis, ways to face a problem, etc. A balance between the two aspects in the textbook is desired.*

He also eluded that the descriptive part represented the current issues that the students needed to know about while the analytical part was essential in building the skills they required to deal with issues beyond what was covered in the textbooks.

3. *General versus Specific*, this criterion addresses the need to balance between the general and specific aspects of the contents. Hisham stated that "…a good textbook has to build awareness and introduce knowledge about its core subject." Ayman also affirmed that it would be impossible to cover everything in detail in one textbook. Hence, he reasoned that,

   > *while, general discussion would cover the required breadth of the textbook by building awareness of its core subject, discussing specific details about some aspects of this core subject provides the required depth in a textbook for a university course.*

4. *Global versus Local*, this criterion addresses the balance between the global and the local issues covered in the content. As Hassan explained,

   > *…the interconnectedness of the environmental issues mandates, to a large extent, their discussion in a global context. However, I believe that their impact is minimal if the issues are not linked to the direct surroundings of the students.*

   Hisham added that this criterion should "…examine how much of the discussions were set in a global context and how many of the examples used were set in a local context."

5. The last criterion was whether the books address its intended *audience* of student teachers or talking to any person concerned with the environment. To express the importance of this criterion, Ayman explained that "…in order to come up with results, we have to keep asking how could this book help a student teacher in his/her future work as a teacher concerned with the environment."

Polling the students' opinions

In a casual conversation with Ayman, he enthusiastically suggested that informal interviews were the best way to poll the students' opinions. Through these interviews, I should be able to initiate discussions with them in regards to the professors' performance and the education process in general. He explained his reasons for this suggestion to be:

> *First, although, I talk to many students from freshmen to post graduate ones, I believe they don't deal with me at ease, they consider me an authoritarian figure. Second, you have no authority on their grades or credentials and you are closer in age to them, they would be at ease in talking to you. Third, as a researcher performing research in this faculty, you have a legitimate reason to ask questions.*

While Hisham applauded the idea, he doubted it was practical due to time limitations and difficulty in analyzing interview results. He added: "I believe that the students will be reluctant to share freely their opinions about the performance of their professors and what they learn here with a stranger." To overcome these difficulties, he suggested surveying the students' opinions using a questionnaire to be distributed to the students taking their courses. Hassan also proposed the idea of surveying the students' opinions using a questionnaire, and saw strength in its ease in providing "relatively conform and abundant amount of information."

Working out the details of the survey, we were faced with various questions covering different facets of the survey process. What questions to include in the questionnaire? How to select the student sample? How big should the sample be? How to administer the survey? were some of the urgent details that needed to be ironed out.

Hisham wanted to shape the questionnaire to resemble a general course evaluation form. He suggested asking about the professor's teaching techniques, suitability of the courses taught to the objectives expected, and relevance to the students' future profession. Ayman, on the other hand, preferred the survey to explore the students' personality, future expectations and their reflections on the programs offered at the Faculty while Hassan wanted to focus the questionnaire on environmental concerns reflecting on the environmental courses offered at the faculty. Instead of tailoring a questionnaire for each professor, I then suggested compiling all the questions into one survey that would cover their different interests. This was endorsed by the participants.

In the first draft of the questionnaire, I included all the questions suggested by the participants. The questions formulated by the six participants are tabulated in Table 1.

After compiling all the suggested questions, discussions with the participants generated a considerable amount of tension regarding what to include and what to omit in the second draft of the questionnaire. Hassan objected to the inclusion of any general questions arguing that they were vague and might confuse students, stating "questions have to be clear and cut, short and to the point." He also reasoned that answers to general questions would be confusing while interpreting the results. In general, he was opting for a short questionnaire that would keep focused on environmental education courses only.

On the other hand, Hisham noticed that the questionnaire did not include any questions in regards to the teacher educator practices or pedagogies, nor did it include "questions in regards to exams and evaluation." Ayman agreed with Hisham's note pointing to the importance of including questions polling the students' opinions regarding the way they were taught. He also agreed with Hassan's opinion that the questionnaire should be short and to the point.

Following a dialogue, the three participants and I agreed to omit general questions and keep the environment and resources questions. We also agreed to add a few questions addressing the professors' performance. The second draft of the survey was approved and is shown in Appendix E.

Table 1. New questions from participants

Name	Questions
Ayman	1. What do they want, goals and objectives? Why did you choose this faculty? 2. What have you learned or expect to learn? 3. What will you teach and how will you teach it? 4. Are you going to stimulate the students' creativity in any subject? If I succeed in making them creative in any subject, they will be creative in facing environmental problems as well. 5. political participation 6. Do they find themselves in the faculty or not, do they feel that they are a being or not? 7. Who are you? 8. Why do you want to become a teacher? 9. Where are you from social mobility?
Hisham	1. Which course do you benefit from the most? 2. Which courses give you information regarding the environment? 3. What do you think are the most pressing environmental issues? 4. What do you think about the condition of the library at the faculty. 5. What do you think about the cleanliness of the faculty? 6. Do you believe that the educational audiovisual equipment at the faculty is adequate?
Hassan	1. The extent of their benefit from specialized environmental courses and curricula 2. The course / subject they benefited from the most? 3. Rank the subjects according to their benefit. 4. Do you have environmental courses, if not, would you like to have them or not, if yes, what did you benefit from them if he answer is no then why 5. Have you participated in any environmental activities at the faculty or the community. If yes what is it if no why. What are the constraints. Are you convinced by such activity or not.
Nermeen	Are they aware of the importance of the environment? Are they aware of the importance of participation on a personal level and on a community level? Do they believe that they have a role to play in this society? Is it important to them to see the Egyptian society getting better? What vision of a better society do they have in mind? Do they have any awareness that there is connection or a relationship between the improvement and care for the environment and religious or spiritual aspects or elements or factors? How do they see the role of the teacher? What is their vision of themselves as teachers?
Dalia	1. What courses they benefit from the most? 2. Do they have environmental contents in their courses or not 3. What do they need from teacher educators.
Eman	1. What subjects do they see covers environmental problems in Egypt or the world? 2. Do they benefit from such subjects? Yes, how? No, why not? 3. What additions do they see possible to add to their information in regards to the environment? 4. How do they utilized the information they get from the subjects?

Setting the criteria for whom to survey, the selection and size of the sample also raised a level of tension in my discussion with the participants. Each expressed different interest in the criteria he set of the sample selection. Hisham and Ayman leaned toward selecting senior students whom they knew since their freshman year and taught through all of their university years. Hisham stated that "while I did not incorporate environmental issues this year, I am sure I did in previous ones. If I made an effect they will remember". Ayman justified his preference by saying that "senior students will give us a sense of what they have gained from us after their four university years." On the other hand, Hassan was insistent in limiting the selection to first- and second-year students from the Elementary Education program. In his words, "these are the students taking the Environmental courses. That's my main concern." To overcome this problem, I suggested limiting the sample to the Elementary Education program students and to draw it from the senior students taught by Hisham and Ayman. This criterion would ensure that that the students had taken the environmental courses in their first two years, and the Educational (----------) course in the third, satisfying the criteria set by all the participants.

After agreeing on the student population, another tension arose regarding the sample size. Supporting a large sample size, Hisham and Ayman even leaned more towards having a census of two of their classes, which approximately would have added up to 1500 students. On the other hand, Hassan suggested a much smaller sample size (100 students in total). He argued that "we already have an idea about what is going on, all what we need right now is to get a feel about the students opinion to confirm whether we are moving on the right direction or we are out of touch with what is happening." Realizing that I would be the one tabulating the results I raised my concern that 1500 questionnaires would need much more time and effort than feasible under my research schedule. Furthermore, I made the participants aware that despite the sample size, the limitation of the criteria we set for the student population would make it hard to generalize the results beyond the scope of that population.

Taking this into consideration, we agreed to administer 200 questionnaires and to divide the sample between the classes of Hisham and Ayman. They proposed to admimister the questionnaire themselves seeing it as an opportunuity to interact more with their students as well as to observe and reflect on the process. Hisham distributed 80 questionnaires to randomely selected his students but instead of giving them time to fill it during the class, he asked them to return their completed questionnaires in the following class (a week after). To his great "shock", although I was not surprised, Hisham received only one returned questionnaire while the other students apparently did not remember the task. Hisham expressed his disappointment but could not sepculate the reasons for the students' behaviour or lack of interest. Sharing my reflections with him, I noted that he had not sufficiently oriented the students to the purpose and importance of the questionnaire. In addition, the students knew it was not part of the curriculum.

After that, the decision was made to have Ayman and Hisham introduce me and the research objective, its importance and its value to the students as well as Hisham and Ayman themselves. They then left the class and gave the students around 15 minutes to answer the questionnaire. However, we ended up filling the questionnaires only in Hisham's classes as Ayman was sick and absent from the University. Of the 200 questionnaires distributed, 128 were completed and returned, which together with the single questionnaire returned in Hisham's initial attempt, gave a total of 129 returned questionnaires for data analysis.

As part of the action research process, I raised my concerns regarding the validity and reliability of the data that would be collected thought the survey: How are we going to ensure that the questions we are asking are addressing the issues under consideration? How do I ensure the reliability of the data given that the questions were not designed with reliability checks? These concerns were quickly dismissed by the participants who argued that the students were willing to participate, and did not have anything to worry about. Answers were confidential and to be used only for research reasons. However, in observing the students during the exercise, I realized that a number of them were not at ease. They wondered if they were going to be evaluated and whether the questions might be part of an exam at the end of the year. Others simply asked me about the results we wanted to reach so they could tailor their answer to the objective. I assured them that they need not have to worry about these concerns.

The results of the survey are presented in the tables in Appendix F. Although the results were not tabulated immediately after the completion of the survey, I later shared the data with the participants. My joint reflection with the participants on these results, as part of the action research cycle, will be presented in a subsequent section of this chapter.

Observation of Student Teachers

To complete the cycle, Hassan and Hisham maintained that observing student teachers during their practicum period was very important. In Hisham's words, "the main objective was not to observe competence in specialization but to observe the students' teaching techniques and how they transfer knowledge to their school students". Ayman added that it was essential to see "if the student teachers relied on dialogue" or engaged in a "one way monologue." Hassan however, was also concerned about the content. "In this way of teaching, do they integrate the environment into the curriculum?"

The selection of the student teachers I would observe was initially based on a sample of four students for each of Ayman and Hisham, and students for Hassan. However, due to time constraints, the final sample included two for each of Ayman and Hisham, and one for Hassan. It should be noted that Hassan was the only participant who gave his student teachers the option of being observed or not. Ayman and Hisham felt that this lack of choice would not be a problem with their selected students.

In addition to my observation, useful data could also be gained from the cooperating teachers' assessment of the student teachers. Hassan and Hisham suggested that I would also ask the cooperating teachers for their respective view of their students' use of dialogue and addressing, where appropriate, environmental issues. Eman recommended "the use of an observation sheet which would allow systematic observation as well as prevent bias or subjective observation". She then designed an observation sheet for me and the cooperating teachers. However, there was a problem in polling the cooperating teachers. Convincing them to participate totally would need to rely on my ability to convince them of the importance of the process hoping that they would spare the time out of their busy schedules. Hassan cautioned that people, including teachers, usually look suspiciously at foreign researchers or even if they are Egyptian, as in my case, if they are aware that the research data was going back to another country such as Canada.

On my first visit to a school with Hassan's student, the outcome was quite surprising. The school was strangely quiet, and in fact empty of virtually all students. The few teachers present informed us that the Ministry of Education had unexpectedly permitted the students to stay home to revise for their forthcoming final examinations. In the case of the other student teachers, they informed me by phone that their practicum would also be suspended for the same reason.

Hence, the interesting question of the extent to which the student teachers utilized dialogical and critical thinking approaches in their practicum could not be answered in this study. For the participants, all expressed disbelief that this would happen at such an important part of the student teachers' program, reflecting in their view the problem of lack of coordination by the Ministry with the Faculty.

Reflections of the Participants

With regard to the content analysis of the textbooks (as detailed in Appendix D), I shared the findings with the participants. They all agreed that the three textbooks needed urgent updating. Hassan stated that the analysis affirmed his position that the textbooks lack connection to the global and Egyptian environmental contexts.

> *We need to include important events like Rio* (UN World Conference on Environment and Development) *on the international level and establishment of the Ministry of the Environment in Egypt. In addition, we should educate the students about Law No. 4* (environmental law in Egypt), *their role as citizens and as teachers to protect the environment.*

Ayman and Hisham reflected on the analysis of the Educational (----------) course textbook, and recommended an updating of the theoretical dimensions such as adding the ideas of Freire, Giroux and Bernstein. However, they also argued for the omission of self-explanatory parts like definitions of social problems and their characteristics, as these were somewhat simplistic. Instead, they felt that students should be encouraged to think about what they perceive to be key social problems and reflect on a critical analysis of the problems and possible solutions. As the three participants shared their reflections, it was also clear, as they acknowledged, that there was space for collaboration for having an interdisciplinary course by their two departments. As Hisham puts it, "there is a great potential for designing an interdisciplinary course that addresses culture, environment, politics, and development and engages the students in a critical and creative way." This was an initiative proposed by one other Faculty member and himself two years before which did not go through, but he had more faith that this time it would succeed.

In regard to the survey, the participants were surprised by the number of respondents (129 out of 280), and encouraged by the comments of two students who expressed their gratitude for the opportunity to address the issues, viz:

> *- Thank you very much for helping us to explain what we feel without fear, and we hope you can help us to change the state* (of education), *you and others. God be with you.*
>
> *- With my appreciation for the discussion and for an issue that touches the society as a whole and your interest in an essential component of the educational process that might be overlooked.*

The participants were also surprised by the limited number of environmental problems identified by the students. In addition, they were also disappointed at some of the causes of environmental problems mentioned by the students, especially those that showed indirect relationships to the environment (e.g., expensive textbooks). In their reflections on the student's opinions in regard to the physical state of the Faculty, the participants were again surprised that there was a proportion that "actually deemed it to be clean". However, they were "happy" to know that the students felt that the Faculty neither prepared them to be good teachers or environmental educators. In Hassan's words, "at least this was consistent with our views".

New questions emerging

Reflecting on the aggregate data and findings, the participants again felt the need to re-examine the research question, "how do we evaluate environmental education in the Faculty and how to improve it". Hassan, Hisham and Ayman felt that the data was not enough to answer either question fully. Nevertheless, they concluded that environmental education in the Faculty was still emerging and needed considerable effort and commitment to reach its full potential. While Ayman was quite discouraged with results of the content analysis and survey, and the cancelled student teacher observation, Hassan and Hisham stressed the need for more evaluation and more effort to improve the program.

Some of the specific suggestions and recommendations included:

- the updating of Environmental (----------) courses textbooks to represent the growing field of studies, research and analyses , and to exemplify how the environment is a vital dimension in the daily lives of Egyptians;
- the updating of the Educational (-----------) course textbook to present a range of educational scholars and perspectives that could be relevant to the Egyptian context;
- enhanced dialogue with the instructors who teach the Educational (-----------) courses so that they can integrate environmental issues and advocacy into the content and pedagogy;
- expedite the collaboration of instructors from the two departments of the participants to design and deliver an inter-disciplinary course on

environmental care that critically relates environment with culture, religion, and development;

- engage in continuous reflection on and in their teaching practice, including being self-critical of their own biases, and to ensure the relevance of the knowledge presented to their students;
- equip the students with the skills they need for critical thinking; self-reliant search for information and knowledge; and translate their awareness into protection and care of the Egyptian environment;

Finally, Hassan and Hisham expressed interest in re-visiting the research question through continuing the action research cycle commencing in the following academic year. They also suggested recruiting one or more interested graduate students who would play a similar role to myself in facilitating the research processes. In terms of the specific procedures, they indicated that they would include a survey (based on the one designed for this study) at the beginning of the academic year for first year students, and one for the senior year in the same department for comparison purposes. The data from the survey would then be utilized to help them improve their own teaching practices in environmental education. In addition, they also suggested engaging the student teachers in critical reflection on their practicum experiences as an attempt to overcome the limited co-operation between the schools and the Faculty.

CHAPTER SIX

CONCLUSION AND REFLECTIONS

Introduction

This chapter will present a concise summary of the major findings and conclusions of the study. It will also include a sharing by the participants and my own critical reflections on the research process. Drawing on the major findings of the study, I will also make a number of recommendations for the promotion and implementation of environmental education in Faculties of Education in Egyptian universities. Finally, the chapter will explore some possibilities for future research in education for sustainability and sustainable development in Egypt, especially in higher education levels.

Focus of the Study

In its focus on environmental education in an Egyptian university, this study examined specifically the teacher education program at the Faculty of Education at Heliopolis University. The significance of the study lies in the vital role that the Faculty plays in preparing teachers who, in turn, will have a major impact on the lives of the children and youths in the future schools of the student teachers. Based on participatory action research methodology, the study has sought to critically and collaboratively explore with a sample of six teacher educators in Heliopolis University their answers, perceptions and perspectives in relation to the following major issues: (a) their knowledge and understanding of environmental problems in local and global contexts; and (b) their meanings of curriculum and pedagogical practices for fostering environmental education in their teacher education programs. It was also hoped that the study would facilitate possible action by teacher educators to improve their curriculum and pedagogy with the goal of helping students to engage in a process of self-empowerment towards thinking and acting critically for building a sustainable future.

Within a qualitative research framework, this study employed a modified form of participatory action research in which I collaborated with the six teacher educator participants over a period of four months in 1998. Following in-depth conversations in which the participants clarified their conceptions and meanings of the ecological crisis and environmental education, three of the teacher educators agreed to continue with the action research phase of the study. While planning and action were initiated by the participants themselves, my role as a co-participant/facilitator/critical friend was to help them problematize and modify their practice, identify and develop their own understandings. In short, my role as a facilitator helped in forming what Carr and Kemmis (1986) referred to as "a self-critical and self-reflective community" (p.205).

Major Findings and Conclusions

As detailed in Chapter Four, the participants generally demonstrated a considerable amount of knowledge of the environmental realities and problems facing Egypt encompassing air, water and solid waste sectors. Their views concurred with national and official studies identifying these issues as the most pressing environmental problems in the country. In addition, the participants presented a considerable amount of knowledge and awareness of other environmental problems and issues in Egypt.

More specifically, however, the participants varied in terms of their depth of understanding and analysis of these environmental problems. Three of them tended to provide rather descriptive information, while the others articulated deeper and more complex views. Although academic orientation might have played a role in shaping the participants' views, it was not always a defining factor. The participants' personal concern for the state of the Egyptian environment seemed to be a more decisive element.

In relation to the perceived causes of environmental problems, the participants mentioned a range of factors which can be classified under three categories: institutional causes, social and cultural causes, and developmental and/or global causes. Among the institutional causes identified were the responsibility of government organizations to protect the environment, and the limited enforcement of environmental laws and regulations. The social and cultural causes mentioned include values and/or practices embedded in Egyptian culture (e.g., using streams for domestic washing in rural areas; burning of post-harvest by-products) and socialized through educational processes (e.g., lack of awareness of environmental problems and care in the curriculum). For the participants, the area of developmental/global causes constituted the major role in Egypt's environmental crisis, including industrialization, polluting industries and technologies, the push for a development paradigm that stresses growth at the expense of sustainability and the dependency of Egypt on TNCs and IMF/World Bank policies that undermine environmental protection and sustainable development.

The exploration of these causes led us to articulate different themes relating environmental crisis in Egypt to different issues. These issues included poverty, education, religion and development. The participants offered different viewpoints in regard to the relationship between these issues and environmental problems/degradation in Egypt. For example, the majority of them were convinced that poverty should not be seen as a cause for environmental problems. However, only three of them were critical of the way poor people were portrayed as perpetrators of environmental damage urging for a deeper understanding of the causes of both poverty and environmental problems. In addition, their opinions with regard to the relationship between education and environmental awareness also varied. While they all stressed the importance of the role that formal and non formal education could play in fostering environmental awareness among Egyptians, others cautioned against the limitations of awareness stressing instead the importance of change of behavior and attitudes based on such awareness. With regards to formal education, a few of them were opposed to the idea proposed by others that education was neutral, stressing the impossibility of neutrality; that education either liberates or domesticates. The participants also pointed to the direct relationship between the state of the environment in Egypt and the way people perceived religion. They all agreed that religion was reduced to worshipping rituals that did not extend to daily lives by reasons of fear, superficialization or conviction by a sector of the society deeming religion as old-fashioned. A few of them saw salvation in the practice of environmental principles within Islam arguing that the crisis evolved as a result of the separation of religion from the daily lives of Egyptians.

To the participants, development was deemed the major contributor to the environmental crisis in Egypt. They all stressed that, in its pursuit of economic growth, the government did not pay due attention to the environmental costs thus addressing the economical and ecological dimensions of development. In addition, a few of them affirmed that development was the thread that ties all the different factors together bringing into the conversations other dimensions of development like the social, values, and political dimensions. They argued that there were complex relations between education, religion, culture, poverty and development and the environment stating that the issues were closely intertwined. Addressing the political dimension of development, the participants acknowledged the interconnectedness between globalization and local development and in turn the environment. Inherent in these discussions was the power relationships and themes pertaining to the hegemony of the North over South countries.

Addressing the future dimension of development, all of them expressed the need for a development model that takes into consideration ecological as well as human concerns. However, they offered contradictory views when talking about sustainable development and sustainability. It was interesting to note that, in spite of official global and local interest and advocacy of sustainable development, half of the participants acknowledged that they did not know what the term meant or that they had not heard it before. The other half acknowledged knowing the term but offered different interpretations of it. Two of the participants cautioned against the contradictions in the term on one hand and its co-optation on the other arguing that what matters was the vision and its practical implementation that takes into consideration the welfare of both humans and their environment. They argued for a model that would fulfill the balance between economic, social, ecological, religious and cultural dimensions. Critiquing the limitations of technical solutions to these interdependent problems, they affirmed the importance of engaging people in a process of active participation in development plans and efforts.

In this study, the majority of the participants' understandings of development were embedded within the technocratic or the Dominant Social Paradigm. As critical analysts like Milbrath (1996), Fein (1993) and Toh (1987) have argued, this paradigm adopts the position of human control over nature and resources and the belief in economic and technological solutions. Although those participants acknowledged the environmental plight and the effect of economic growth on the state of the environment and the people, they adopted a reformist approach rather than a transformative one as they highlighted the importance of economic growth, faith in technology and efficient environmental management and monitoring techniques. At the some time, the other participants voiced their concern that technical solutions were reductionist and limited in scope. Advocating a view of sustainable development that considers humans as part of the holistic environment as well the need for personal transformation that is linked to structural change, they demonstrated "…a shift from a technocratic to the person-planetary paradigm" (Drengson, 1995, cited in Bernardino, 2000:41), an ecocentric position (Naess, 1995), a New Ecological paradigm (Milbrath, 1996) or the New Environmental paradigm (Fien, 1993).

Moving to environmental education within the Faculty of Education, Chapter Five presents an overview of the participants' own definitions for environmental education based on their beliefs and emerging from their practices. It also extends to exploring the content and pedagogy of environmental education within the Faculty as well as the participants' own practices and reports on the action research phase of the study.

The participants all agreed that the environment needs to be viewed holistically that includes human beings in relation to each other as well as to other beings and their surroundings. They made a distinction between environmental education as *tarbeiah* (upbringing) and environmental education as *ta'leem* (schooling or acquisition of knowledge). Subsequently there was also another distinction between the role of an educator as a parent figure who is responsible for the upbringing of students and the role of a teacher in a traditional sense of passing and transferring information to their students in a critical way. While they all praised the role of educators, they were also convinced that that role was fading in the light of the challenges within the Faculty as well as in the whole education system and the Egyptian society.

It is noteworthy to point out that the participants had limited knowledge about the overall state and content of environmental education within the Faculty. The few examples that they noted was related mainly to the courses they were teaching. Besides acknowledging the importance of the content of the courses, the participants all stressed that pedagogical practices, or how the courses were taught, were even more important While they named more than one way to address environmental issues, my observations led me to question if any of them was successful in reaching the set goals of equipping the students with problem solving skills and training them to think critically so they can develop their own solutions to face environmental problems.

However, the reason for not reaching such goals could be attributed partially to the number of challenges that the participants acknowledged they faced every day. These included large courses, lack of instructional material, lack of collaboration between Faculty members in different departments, inadequate library resources, and deteriorating and inappropriate physical conditions of the Faculty as well as its cleanliness. Reflecting on these challenges, a few of the participants were convinced that a technical solution that takes care of those challenges had to be a prerequisite for environmental education in the Faculty. However, others were skeptical at the time it would take waiting for an outside solution. They proposed finding viable solutions that could challenge the realities in the Faculty and make meaningful contribution to the improvement of environmental education.

It could be argued that environmental education in the Faculty of Education was in an emergent or infancy state at the time of the study. Notwithstanding the challenges which the teacher educators faced in their professional lives, it was not evident in any of the courses or through the participants' pedagogies that education was governed by an "ecological philosophy" as articulated by Fien and Trainer (1993). Drawing on their principles of such a philosophy, it became apparent that environmental education in the Faculty did not promote an understanding of our ecological dilemma, an awareness of the problems involved or an understanding of their root causes. It did not entail enough concern for the welfare of the planet, its ecosystems, its culture and its people. Put differently, none of the courses or the participants promoted a holistic view of the problems and interconnections to their students.

Seen through the lens of the three approaches that Fien (1993) identifies in relation to environmental education, it becomes obvious that the Environmental Studies courses in the Faculty fall under the umbrella of Education about the environment. It emphasizes knowledge about the components of the natural systems and processes and economic and ecological factors that that shape the decisions about how people use their environment. These courses depend mainly on the lecturing of the instructors who often fail to link them or make use of the students' experience in the environment as would be expected in Education through the environment. In addition, there is no doubt that Environmental Studies courses or other participants' attempts to point to connections between content of courses and daily lives do not go beyond just that. They do not promote the agenda of values education and social transformation advocated by education for the environment that Fien (1993) and others have advocated. I believe that it is safe to assert that environmental education in the Faculty did not address the objective of Education for the environment which promotes the engagement of students in exploring, understanding and resolving environmental issues to foster the values of the New Environmental Paradigm.

Comparing the participants' courses to the six foundations of educating people to live sustainably (Orr, 1992), it could be inferred that these courses did not foster the awareness to the students' that they are part of the natural world. Further, they did not address the complexity of environmental issues due to the compartmentalization or the uni-disciplinary approach used in the courses. Nor did they address the interconnections between the students and their natural world and the students and others. There is little evidence that the process of environmental education was a critical one. Teaching did not take place in the environment nor did it build on students' experience in their environments and finally, it was not relevant to the challenges faced in building a sustainable society.

Their criticisms and visions regarding what was being done and what should be done to integrate environmental education in different curricula within the Faculty was a component of our research. There seemed to be an agreement between participants that the situation of environmental education needed closer and immediate attention. The participants were convinced that there is a need to transform education and adopt a framework that would integrate environmental education into the core of the educational process in the Faculty. Divided evenly, three of the participants expressed hopelessness in any personal effort on their side, while the others were more hopeful, viewing it as a "moment of truth" and a revisiting of their mandates and efforts to work towards viable solutions. The "hopeful" group of participants agreed that the process of teaching and learning needs to be transformed.

For these three participants who decided to continue with the action research phase of the study, the common motivation was to evaluate and thereby improve their own practices of environmental education in the Faculty. They agreed that there should be three components of evaluation, namely the curriculum; the performance of Faculty members; and that of students. The process of evaluation of the curriculum was focused on the content analysis of books used in the environmental studies courses and one potentially suitable for course use. This analysis showed the need to update the content as well as make references to the interconnections between environmental issues and the lived experiences of students.

In regard to the performance of Faculty members, the evaluation process included the participants' critical reflections on their own practice as on my own observations of their practice during the research, and a survey of the students. All three participants emphasized the importance of including out-door activities and experiences in their teaching, as well as engaging in more dialogical and participatory teaching-learning processes. They also favored a systematic approach to students' evaluation of their courses. The students' survey results elicited some disappointment among the participants (e.g., when the students raised issues not related to environmental problems; or when a number viewed the Faculty as "clean" or having adequate physical infrastructure). However, they were pleased to find that many students desired to become teachers based on an intrinsic appreciation of teaching rather than for external incentives (e.g., getting a guaranteed job and/or private tuition services).

The process of the evaluation of students was planned to be two-fold. First, the cooperating teachers would be polled on their assessment of the students' competence, albeit, as noted in Chapter 5, the observation sheet regrettably did not include items related to environmental education. Second, I would observe student teachers during their practicum in order to assess the degree to which they integrate environmental perspectives into their teaching, and utilize critical thinking and dialogical pedagogies in their teaching, including drawing on their students' lived experiences. However, due to an unexpected decision of the Ministry to cancel schools for students to revise for the final examinations, this evaluation component of the action research did not take place. This meant that the action research cycle was partially interrupted. However, this barrier was acknowledged as an important planning and coordination problem to be prevented in a future action research process.

Finally, among the three participants, there was agreement on the value and feasibility of collaboration to design and implement an inter-disciplinary course on environmental education to be taught in the Educational Foundations department. However, in terms of continuing the action research process, one participant expressed a sense of despair and seemed unlikely to participate again. The other two participants were more hopeful and keen to engage in another cycle of action research to evaluate and strengthen their efforts in environmental education. As Hassan puts it, he felt "like the drowning person hanging by a straw" (an Egyptian expression implying the presence of hope).

Reflections on the Research Process

Given the participatory orientation of the study, it is pertinent to also summarize some reflections on the research process that were articulated by the participants, as well as my own thoughts and learning gained from the process. Overall, the participants expressed mixed feelings towards the research as a whole. While Dalia and Eman were skeptical about whether this kind of research could lead to any realistic or positive result because of its narrow focus (limited focus) and limited number of participants, Hisham, Ayman and Hassan mentioned the same reason as its strength. In Hassan's words,

> *...we all know that what the educational system needs is a total revamping. But, we also know that this is not in our hands. However, the research we have engaged in offers a lot of promises. A small scale is what we need and what is feasible in the time being. We can work with interested Faculty members and once we get to them it would be easier to spread.*

Likewise, Ayman affirmed that that the participatory research process adopted would be feasible for his Department (Educational Foundations). "We can do it systematically and continually improve as we go with any course and not only environmental education." Hassan likewise saw one of the benefits of the research as leading him to discover there were other Faculty members who were interested in the subject as well. "This could be the seedling for a new commitment to environmental education in the Faculty." Ayman elaborated on this point by noting that

> *... we could also tell that even if it is not time for collaboration on a wide base there is definitely room for it between a number of the participants. Some Faculty members are ready to go the extra mile or even ten miles to benefit their students and their country.*

Among the participants, Hisham especially appreciated the participatory spaces afforded by the research process. As he noted,

> *... you didn't come to me telling me these are the environmental problems, how do you address them. You also didn't come to me and say here is what you are doing wrong, correct it. The question was what can WE do together and that's a big difference. I won't tell you "wow" or "you caught the wolf by the tail"* (an Egyptian expression usually used in a sarcastic way to describe someone who has accomplished or done something deemed impossible). *However, in a way you did. You managed to engage Faculty members in a qualitative study, which is the first thing. The second is that you got them interested in the process of finding out what was going on in regards to environmental education rather than telling them. Third, I didn't really feel that it was your research; it was indeed mine. It was about my practice and geared towards improving it. I thought I had all the answers to the questions and problems facing us but your involvement helped in pointing out the complexities of the issues and that attention needs to be paid to outside challenges as well as to our own practices.*

Hassan echoed this sentiment by noting that the approach does not make him an "object" of the research. He felt he was

> *... both an object and a subject. The questions you were asking were not merely questions about facts but facts as I see them, directly relating to my world, how I think and how I interpret those facts around me.... Looking back at the process of exploration, it is becoming clear that sitting down and thinking about teaching makes problematic what we have often taken for granted. The connections I referred to between my teaching and the conditions in the Faculty and the way the student teachers learn bring us back to the process of education.*

Ayman shared similar ideas on the value of a participatory model of research. On the other hand, while Dalia and Eman were positive about the opportunities for them to share their views on their experiences through a qualitative research methodology, they both expressed dissatisfaction with the participatory emphasis of the study. Dalia, for example, queried me on my "contribution as a researcher". In her words,

> *... what is this role of facilitator? If I had a solution I would have solved the problem a long time ago. I need somebody to tell me what to do. Third, What is new in the findings...nothing. We know about the challenges. Maybe that there are other Faculty members who see the same challenges but so what. Fourth, are you now going to give me a recommendation of what to do? There are some courses that cannot include the environment in any way possible. For these reasons I didn't see merit in the process. It did not arrive/come with anything new. For research, you need numbers, coherent data that could be analyzed and lead statistically reliable results. Then you could come up with solutions.*

Clearly, Dalia favors a positivist or post-positivist orientation to research. Eman similarly felt that the research had been "limited to exploring the problem", and claimed that I had not given her

> *... a systematic well thought of solution to work with or apply. So, the students are not getting enough environmental education, we already knew that. The Faculty is dirty, we already know that too. It is good that we heard other points of view but it is definitely not enough.*

Nermeen also praised the qualitative methodology in the study but expressed the need to modify the participatory dimension. While willing to cooperate in the action research phase of the study, she would have preferred that the action was prescribed by me. In her words "tell me what action you want me to do, and I will do it", to which I responded by pointing out that action research is not authentic unless participants are willing and self-motivated to conceive and put into practice appropriate action.

Another limitation noted by Hisham, Ayman and Hassan was the time constraint they faced in engaging in participatory action research. As Hassan puts it, "it suffered greatly from the shortage of time and our busy schedules. I think that if it were woven into our schedules it would have led better results". In this regard, I shared my regret that I had not foreseen the extent of this constraint and in hindsight; it would have been preferable to commence the study at the commencement of the academic year.

In terms of my participation in the research process, I felt that I was engaged, as Carson and Sumara (1997) put it, in "a process of becoming". I was interested in coming to an understanding of what environmental education means to teacher educators and how they view themselves as environmental educators in their own contexts. I also engaged in the reflective process on the theory and practice of environmental education in a Third World context. To me the research process was indeed a process of learning -- learning about the participants' meanings and understanding of environmental problems as well as the practices of environmental education in the Faculty of Education. Consistent with my belief that environmental problems could never be solved with a top-down or an imposed solution, I found a participatory mode of research very appealing. Likewise, any development in environmental education in the Faculty of education has to emerge from within the Faculty, namely the teacher educators themselves. I believed in my heart and still do that it is a very appropriate way to tackling environmental education problems or issues as well as other educational problems as well.

After five months of engagement in the life of the Faculty, the research period came to an end. I feel I have gained a lot from the experience. The institutional realities as well as the educational challenges, which I thought I understood, became more real and contextualized for me as the research advanced and my interaction with the participants increased.

At the outset, I was full of anticipation that the research would be a success in all aspects. Official entry had been facilitated by Dr. Khaled, a professor emeritus in the Faculty and the founder of environmental education in the Arab world. Being Egyptian, I thought I was attuned to Egyptian culture; and that the participatory nature of the research would be an incentive to encourage Faculty members to participate. I was filled of excitement when it was time to visit the Faculty for the first time. The literature of action research cautions researchers not to have preset expectations (Elliott, 1991). However, I found myself running different scenarios in my head about how the research would go. I viewed the process as twofold. The first included entry into the research site and the process for the selection of participants. Second is the action research phase where I would be working collaboratively with teacher educators.

I was under the impression that the first part of the research would be straightforward. Although I was "coming" from Canada, I did not anticipate any problems in how people would see me. I was Egyptian and I was "home". Moreover, I thought it was enough to be accepted as a researcher with a proposal for the research. However, from the first meeting with Dr. Khaled, I realized that I had not paid enough attention to the cultural context. On sharing with Dr. Khaled the objective of the research, the suggested sample and the participatory process, he tried to dissuade me from the process arguing that the sample was not enough and that the data would not have any "scientific" significance. While it was important at that time to stress the research strategy and/or vision to Dr. Khaled, it had to be done in the most diplomatic way as to avoid any unintended notions or gestures of disrespect for a senior professor. I faced the same problem when I was trying to distribute the selection questionnaire. In addition, it was also obvious that the participatory nature of the study, which I thought was a strength point, was one of the factors that turned the faculty members away from the research. All through the selection process, Dr. Khaled was trying to point me to the evidence that it would not be possible. It was not until later in the study, after he learned about the outcomes of my first conversations with participants, that he was convinced that a qualitative study was feasible.

During the first conversation phase of the research, in which I explored the participants' meanings and understanding of environmental problems and their causes in the Egyptian context, I experienced a "cultural" barrier, which I had expected. Because I was perceived as a graduate student undertaking research, and most of the participants were of a senior academic status, this gap in "status" initially created a "formal" professor/student relationship. However, my daily presence in the Faculty and continuous interaction with the participants enabled me to develop rapport and trust (as demonstrated by a less formal interpersonal mode of conversation) necessary for a co-participant relationship in action research.

The second phase of the action research which involved collaborating with the participants did not turn out to be as challenging as expected. While all the participants were oriented to the nature of the research with a stress on the participatory nature and their role as co-researchers, as earlier mentioned, half of them decided to opt out of the action research phase. This decision could be attributed to more than one reason. First, these participants might have felt that the extent of the challenges extended beyond their abilities or jurisdiction to face them. Second, there seems to be a misunderstanding of the concept of participation, which they might have been viewed as "cooperation" rather than "collaboration." Third, those who opted out may have favored a more positivist approach to the research question relying on statistical analysis and large number of participants to present the data. For me, this difference in response brought forth questions; whether I have offered enough explanation and orientation to the nature of the study, whether I have offered enough support to the participants, and whether I have done something to sway those three participants from continuing forward to the following phase of the study. Another concern that was re-emerging at that stage was whether the context and reality within the Faculty allowed for such research and the possibility and extent of collaboration between the participants and myself. It also brought forth the question of bias and if I was biased toward the other participants. Discussing these concerns with the participants I was assured, to a certain extent that it was the nature of the research that they thought was limited in addition to the extent of the challenges within the Faculty. However, some were more critical than others as noted earlier in this chapter. At that point it was important to me as well to the research process to re-examine my role in the research.

After sharing my concerns with the three participants who decided to continue with the action research phase, they agreed that I would be the coordinator and rapporteur for the research activities. While I agreed, I also negotiated with them taking a more active role by stressing the role I would be playing in engaging and "provoking critical analysis" (Dickson & Green, 2001) by the participants of their realities and lived experience. In addition, I took on the role of a "catalyst." (Stoecker, 2000, Dickson & Green 2001). Due to the participants' heavy schedules I would devote my energy and time to help with any planned action on their part. While initially apprehensive if I could successfully fulfill this role, the process turned out to be relatively smooth as I learned to "let go" of a felt need to "control" events, and to trust the participants in the act of collaboration. Nevertheless, it is also pertinent to recall instances when cultural barriers emerged as the research progressed. For example, Hisham voiced his concern as follows:

> *I didn't feel comfortable when you were telling me about your observations in regards to the workshop that I conducted with the students. I was slipping into the hierarchical reality and saying "how dare she criticize me?" When it was time to conduct the workshop again, I couldn't help but clarify my evaluation technique to the students. I took more care with the following class and probably every class I intend to have a workshop in.*

In this regard, due to my cultural socialization in not questioning or criticizing "teachers", I too felt unease in reflecting negatively on Hisham's practice, as well as the others. This barrier was overcome by mutual efforts on my side as well as the participants' side. My efforts to overcome this barrier continued as I played my role as a participant observer, and engage and probe the participants' views and share my observations with them. On the participants' side, they continued to reflect critically on their practices thus, removing themselves "from the comfortable habits of the familiar" (Sumara and Carson, 1997: xvii). This is also evident from Hisham's reflection mentioned above.

My aim for the research was to follow an emancipatory path (as described by Carr and Kemmis, 1986), to work collaboratively and through reflection, and for us, the participants, to take a joint responsibility towards the improvement and development of our practice. The entire time in the Faculty and with the participants was spent with an hidden feeling of uncertainty and wonder whether our participatory approach (deemed unconventional in an Egyptian context) would materialize into emancipation for the participants. From some of the participants' reflections on the research process, it became apparent that a few of them engaged in the study were searching for technical solutions rather than the transformation of the environmental education program and practices. However, the interest of other participants and their enthusiasm led me to believe that a path to emancipation is possible.

Recommendations for Alternative Policies in Environmental Education

Based on the major findings of the study, the following recommendations can be made for alternative policies in environmental education:

(1) There is a need for the re-examination and reconstruction of the courses that directly focus on environmental studies in terms of content (e.g., updating, relevance to the Egyptian context) and pedagogy (e.g., to encourage more critical and creative thinking; to enhance problem solving skills; to catalyze the learners' self-empowerment for transformation). Most importantly, the transformed courses need to centrally integrate perspectives and insights drawn from Egyptian cultural heritage and locally relevant sources of knowledge.

(2) In addition, efforts should be made to enhance the systematic integration of environmental issues into other courses in Faculties of Education. This would in turn require the provision of professional development or in-service opportunities in environmental education for other Faculty members who lack background and experience in the field.

(3) As many participants suggested, it will be helpful to design an inter-disciplinary course that addresses the relationships between education, development and environment in a holistic way, and challenges students to promote environmental care within their future professional and work lives.

(4) It will be essential to explore avenues of collaboration between the Ain Shams Institute for Environmental Studies and the Faculty of Education members, especially to draw on the knowledge and skills of Institute staff for teaching and research initiatives.

(5) The establishment of a data base on the courses that directly or indirectly address environmental issues will raise the awareness of Faculty members

to collegial efforts in environmental education, and help promote their collaboration and exchanges.

(6) A systematic framework for student evaluation of the courses in or related to environmental education will be helpful to instructors for improving their teaching of those courses. Such a process is consistent with the pedagogical principle of dialogue that provides opportunities for students to reflect on their teaching and learning experiences.

(7) One participant felt that an additional year should be added to the student's program to enhance the student's knowledge in their major or specialization subjects, extend the practicum to six months, and further deepen their understanding in inter-disciplinary environmental perspectives. In my view, however, this additional year would not be feasible due to lack of resources and a continual demand for teachers. An alternative strategy could be to increase the length of the practicum from 3 weeks to 3 months accompanied by a reduction in "theory" coursework.

(8) Relevant administrative units in the Faculty as well as interested Faculty members, need to develop initiatives and programs for involving students in environmental advocacy (e.g., clean-up Faculty day involving both students and faculty members; conservation of energy and water use within the University; lobbying Government and other societal sectors for environmental care policies and practices; networking with and volunteering for environmental NGOs). However, in regard to the last example, it is important to note that current official regulations do constrain the level of student political activities. Hence, the challenge for environmental educators is to be able to catalyze environmental action in ways that are not seen as "political" mobilizing.

(9) Research in environmental education, whether by Faculty members or graduate students, needs to shift from a positivist or post-positivist paradigm towards a critical and emancipatory paradigm. In this regard, as this study has shown, participatory action research will be a very relevant methodology for emphasizing critical and emancipatory principles.

Hence, there is also a need to include a graduate course on PAR in the Faculty's offerings.

(10) The Faculty should direct its energies towards developing an effective and relevant in-service program in environmental education for teachers in Egyptian schools. One especially important aspect of such in-service development would facilitate the teacher's capacity to draw on local resources and appropriate technologies to educate for care of the environment. In addition, similar in-service should be offered to religious personnel, *Sheiks/Imams* (Muslim Clergy) and Priests, as well as media professionals to attune them to the urgency of integrating environmental perspectives in religious activities and media reports and programs.

(11) In terms of the mode of evaluation and assessment of students in the Faculty, there is an urgent need to shift from a "banking" and rote-learning paradigm towards one that catalyzes critical and problem-posing values and skills, and encourages a transformative application of knowledge and understanding.

(12) As the participants stressed, there is an urgent need for the improvement of the teaching and learning infrastructure of the Faculty, including classroom facilities, instructional materials, multimedia equipment and information technology, that would facilitate environmental education (and indeed all other areas of the teacher education program).

Implications for Further Research

Based on the experience of this study, the following implications for further research can be suggested;

(1) First, since the empirical data collection for this study was completed in 1998, it will be interesting to follow-up on the action research phase with at least the three research participants (Hisham, Ayman, Hassan) who had indicated their desire to continue with their action research cycle. Moreover, with the appointment of new staff members to the Faculty over

1998-2003, this study can be conducted again with a new sample of interested participants.

(2) Given the important role of the Institute for Environmental Studies in Ain Shams University in offering graduate degree programs, including one focusing on environmental education, it will be meaningful to conduct a similar participatory action research study that involves not only the Institute staff but also the graduate students. With the inclusion of the students' voices, the outcomes of such a PAR study will be useful for the improvement of the Institute's graduate programs in environmental education.

(3) In Egypt, the growth of NGOs and youth organizations concerned with environmental protection has been acknowledged as an important and dynamic dimension of sustainable development. However, there is also agreement within and outside these groups and movements of the lack of research on their programs and practices. It would therefore be very useful to explore possibilities for collaborative action research projects involving such NGOs and youth organizations, community members, government agencies and university researchers/educators. Such projects will yield useful ideas for enhancing the effectiveness of community-based environmental education.

(4) Finally, a comparative research project focusing on the Arab region would be worthwhile pursuing, in order to gain insights in the similarities and differences between and among countries in the design and implementation of environmental education in Faculties of Education. Lessons can be learned from success stories as well as from failures, and a deeper appreciation gained of the role of Arab cultural and social contexts in addressing environmental problems and challenges.

A Concluding Reflection

The experience of conducting a qualitative research study in Egypt, a country where positivist and quantitative methodologies have hitherto been the norm, is "challenging but exciting" as Cook (1998) describes it. I would add that the experience of attempting and actually engaging and collaborating with researchers, in a participatory research, has been thrilling and enriching. At the end of both the academic year and my research period, I was and still convinced that participatory action research needs to be expanded in Egyptian educational contexts to continue trying to find answers to the pressing question: How can teacher educators and teachers constructively address and face the challenges of their everyday professional lives in a way that they may become agents for including and transforming environmental education in the Faculties of Education? Hopefully, in the near future, I will be able to further contribute to this project in collaboration with a growing community of educators *for* the environment and for local and global sustainability.

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APPENDIX A

Survey Questionnaire

This questionnaire is intended to collect basic information about the experiential background of teachers in relation to environmental education. The information will be used in conducting a research project designed to analyze the theory and practice of environmental education in the Faculty of Education at Heliopolis University. The information that will be gathered through this questionnaire will be kept confidential. In any other case, your permission will be sought first.

Please fill out this questionnaire with the information called for.

Name ....

Department ....

Educational background:

Degree/s: ....
....
....

Area/s of specialization: ....
....

Courses taught: ....
....
....

Courses you are currently teaching
....
....
....

Have you attended and/or organized courses/seminars/workshops/conferences on/or related to environmental education? Please list below.
....
....
....

Have you taught any environmental education?
.... Yes .... No (please check)

If your answer was yes, how was it taught?
……… As a separate subject
……… Integrated in other subject areas

If integrated in other subject area/s, which subject area was it? (Please check)
Mathematics ……..
Chemistry …………
Biology ……………
English ………….
Geography ……….
Other area/s ……..
(please specify) ……………
………………………………………………………………………………………

Have you ever been involved in any activity related to environmental education?
……… Yes ……….. No (please check)

If the answer is yes, please specify:
……………………………………………………………………………………………
……………………………………………………………………………………………

What do you think of the environmental situation in Egypt?
……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

What particular environmental issues have you been concerned about?
Please check:
……. Air pollution
……. Nile, Red Sea, Mediterranean and lakes' pollution
…….The deterioration in the fertility of the land
…… Others (please specify): …………………………………………………………...
…………………………………………………………………………………………...

Would you be interested in participating in an environmental education research project?
…….. Yes ……. No (please check)

Thank you for your cooperation.

APPENDIX B

Survey Questionnaire

The researcher is studying for her Doctor of Philosophy at the University of Alberta, Edmonton Canada. Her topic of investigation is entitled "Environmental education at an Egyptian University: The Role for Teacher Educators." Teachers play the most important part in disseminating environmental education and awareness between their students. The researcher has chosen the Faculty of Education at Ain Shams University because of it prominence in the field of education in Egypt and the whole region.

The four years for preparing and educating teachers is the most important period that student teachers develop their skills teaching and it also serves as an excellent time for developing interests in environmental issues. Thus, the research project is directed at examining the realities and challenges of teacher education through working with teacher educators – Faculty members in different departments of the faculty.

The research includes a few stages:

- A survey of Faculty members through the ways they address environmental problems through different subjects.
- Identifying a number of faculty members who acknowledge their willingness in engaging in subsequent stages of the research. The study is a collaborative action research and employs a number of qualitative strategies for data collection and analysis.

Following are a few questions to explore your contribution and activities in addressing environmental problems through your teaching or other activities within the Faculty.

The researcher expresses her gratitude for your forthcoming cooperation in responding to this questionnaire.

1. Name ....

2. Department ....

3. Educational background:

Degree/s: ....
....
....

Area/s of specialization: ……………………………………………
……………………………………………

4. Courses taught: ……………………………………………
……………………………………………
……………………………………………

5. Courses you are currently teaching: ……………………………………………
……………………………………………

6. What are the environmental problems in Egypt as you see them?
- Depletion of resources
- Population growth vs. available resources
- The lack of awareness between the Egyptian people
- Desertification
- Biodiversity
- Water pollution
- Air pollution
- Noise
- Deterioration of the fertility of the land
- Others (specify)
- ……………………………………………
- ……………………………………………
- ……………………………………………

7. Which of these problems have you covered in your teaching or any other activity at the Faculty?
- ……………………………………………
- ……………………………………………
- ……………………………………………
- ……………………………………………

8. To what extent do you include in your teaching of these environmental problems their root causes or ways to counter them?
- Always ( )
- Sometimes ( )
- Never ( )

If you do include root causes, then how?
- As a separate subject
- Integrated in other subject areas
- Term papers for the students.
- Others (specify)
- ……………………………………
- ……………………………………

9. To what extent do you face problems in teaching about environmental issues?

- There are no problems (   )
- Limited problems (   ) (Specify)
- ………………………………………………
- ………………………………………………

10. Would you be interested in participating in participating in the following stages of the research?

- Yes (   )
- No (   )

The researcher will contact the respondents who indicate their willingness to be part of the subsequent stages of the research.

Thank you for your cooperation.

The Researcher

Solafa Goueli

APPENDIX C

Results of Faculty Members Questionnaires.

These are the results of the questionnaire are represented in the table below however data from open ended questions will follow each table when necessary.

Table 2. Gender distribution

	Female	Male	Total
Frequency	16	31	47
Percentage	34.0	66.0	100

Table 3. Distribution of Academic Rank

	Professors	Associate Professor	Assistant Professor	Teaching Assistant	Total
Frequency	10	8	22	7	47
Percentage	21.3	17.0%	46.8	14.9	100

Table 4. Environmental Problems in Egypt

Problem	Frequency	Percentage
Limited Environmental awareness	41	87.2%
Depletion of Resources	32	68.1%
Population Growth	31	66.0%
Deforestation	25	53.2%
Biodiversity	15	31.9%
Water Pollution	38	80.9%
Air pollution	39	83.0%
Noise	37	78.7%
Deterioration of land fertility	27	57.4%
Deterioration of the quality of the Egyptian Monuments	19	40.4%

Other environmental problems identified by the survey participants included: smoking, nuclear weapons, the ozone layer, illiteracy and its effects on environmental awareness, bilharzias and its effects on production, pollution of food as a result of the use of pesticides, pollution of potable le water, the threat to the delta because of the Mediterranean sea, people 's negligence of the environment and their misuse of it, waste and the ways of getting rid of it by burning, the extensive use of pesticides in homes and farms, the extensive use of aerosols, the pollution of Nile in particular, the high density of people, the deterioration of streets and the incompliance of people with environmental laws, the absence of the concept of cleanliness, the decreasing number of green areas, the extensive use of energy, and the improper utilization of water resources.

Other identified problems that does not have a direct relation to the environment included: the deterioration of the status of people (citizen), the deterioration of the status of the government, blood donation, transportation, housing, education, underemployment and fundamentalism or extremism, drugs and its effects on the youth, illiteracy, low production, lack of resources available for research, the unavailability of scientific appliances and, the unavailability of places for laboratories.

Table 5. Dealing with Environmental problems in teaching

	To a large extent	To a limited extent	Rarely	Total
Frequency	16	26	5	47
Percentage	34.0	55.3	10.6	99.99

Table 6. Methods used to address environmental problems

Method	Frequency	Percentage
Directly	16	34.0
Integrated within other subjects	24	51.1
Through readings and term papers	14	29.8
Others	10	21.3

Other ways of dealing with environmental problems included: dialogue with students, case studies, the development of students' positive attitudes towards the environment, being role models, lectures in the faculty regarding the environment and activities and clubs outside and inside the faculty. The participation of individuals in projects for protecting the environment, educating students and following environmental laws, and inviting officials and environmental experts to lecture the students on environmental problems.

Table 7. Extent of problems facing educators in dealing with environmental problems in class

	No Problems	Limited Difficulties	Total
Frequency	13	34	47
Percentage	27.7	72.3	100

The types of difficulties mentioned included students' negligence, the high numbers of students in each lecture, the high load of teaching, the unavailability of time to deal with environmental problems, lack of libraries that have stuff on the environment, lack of research done on the Egyptian environment, lack of resources, the separation between theory and practice (walk the talk kind of thing), lack of participation, Weakness of educational media in this regard, and the ambiguity of the environmental philosophy or governmental policies in educational curricula.

Table 8. Interest in taking part in the research.

	Yes	No	No Answer	Total
Frequency	28	16	3	47
Percentage	59.6	34.0	6.4	100

APPENDIX D

Content Analysis

Environmental course textbook (1) (1997)

Introduction

This book is written by a number of Faculty members in the Faculty of Education. It is used for students in the first year of their program in Elementary Education. It consists of seven chapters, a total of 200 pages. The first chapter presents different definitions and concepts pertaining to the meaning of environmental studies, ecology, ecosystems and their characteristics, environmental balance and a brief history about the interaction between human beings and nature.

The second chapter presents in more detail the meaning of environmental balance and different cycles of oxygen, carbon, nitrogen, phosphorus and water. It also presents reasons for imbalance in ecosystems and its effects on human beings.

The third chapter gives discusses the topic of human beings and natural resources. It goes into the details of how solar energy is generated; the importance of water to all living things; the Earth Core and its components.

The fourth chapter presents Renewable resources in the natural environment. It contains information about different kinds of forests. In addition, it also gives presents geographical distribution of animals over six continents.

The fifth chapter gives an account of non-renewable resources like different kinds of metals and their different uses.

The sixth chapter talks about development and how humans are living beyond the carrying capacity of the earth. It goes on to give a brief history of sustainable development and why it is essential to life on Earth with a comparison between "developed" and "developing" countries. It also addresses the importance of sustainable development principles in the process of decision making and its repercussions on the lives of human beings.

7

The last chapter revolves around 'deserts', the definition of a desert, the characteristics, temperature; rain; the geographical distribution of deserts in the world and the categorization of different desert plants.

Content Analysis Criteria

1. ***Publication dates*** for the references used in the books. The book contains 30 references: five references published in the early 1990s, 4 during the 1980s and the rest in the 1970s with one published in 1967.
2. ***Descriptive versus Analytical***. The book contains descriptive information about the main topic in each chapter. Rarely did any of the chapters contain any analytical information or any reference to root causes, except when it addressed sustainable development. In that chapter some root causes for the state of the environment were given but not critically.
3. ***General versus Specific***. The information in this book was quite general. It hardly gave examples about phenomena or particular living things like plants or animals it presented in chapters four and five. In its chapter on development and sustainable development, the book provided general information rather than specific examples.
4. ***Global versus Local***: The information in this book seemed to be generic and did not specific any particular part or area of the globe. One reference was made to the Arab region in the last chapter about deserts and how the region is mainly arid and the Arab's activities to adapt to their environment.
5. ***Addresses student teachers or general audience***. It was hard to tell the audience of the book. It was quite general with no specific region of focus. However, it could be viewed as a resource book about the basics about the environment but not necessarily for teachers or student teachers.

Environmental course textbook (2) (1997)

Introduction

This book is written by a number of Faculty members in the Faculty of Education. It used for students in the second year of their program in elementary education. It contains eight chapters with 271 pages. The book builds on information in the first book.

Chapter one explores the concept of environmental education, its history and goals based on a number of intergovernmental conferences such as Tbilisi and UNCED. The chapter also includes a differentiation between goals of environmental education for different ages and school levels. It also explores environmental education for adults as well as questions for student teachers to evaluate their environmental knowledge.

Chapter two deals mainly with the topic of the management of "Planet Earth." It gives detailed information about the problem of solid waste and the concept of the carrying capacity of the earth as well as management measures that should be taken into consideration.

Chapter three addresses environmental pollution problems with reference to serious ones like air and water pollution.

Chapter four presents different environmental problems in the world as well as with reference to Egypt. It names population growth, depletion of resources and desertification.

Chapter five presents and discusses different sources of energy in great detail with possible future alternatives to current sources of energy.

Chapter six gives an account of climate change, green house gases, repercussions of climate change and anticipation for the future. It also presents an account of the depletion of the ozone layer.

Chapter seven discusses the meaning of biodiversity and the dangers of the loss of biodiversity, it presents the effect of the change in habitat as a problem and addresses humans' role in that process.

Chapter eight addresses the relationship between development and the environment. After presenting a definition for development and its goals, the chapter presents an account of development in Egypt whether it is agricultural development, industrial development, development of the infrastructure, development of the tourism industry and development of social care. The relation between development and the environment was not addressed in a direct way.

Content Analysis Criteria

1. ***Publication dates*** for the references used in the book. The book contains no references which might infer that the authors of the book used their own references.
2. ***Descriptive versus Analytical***. The book contains detailed descriptive information about the main topic in each chapter. However, it contains a lot of reference and information on root causes of environmental problems as well as the roles that individuals should play in protecting the environment.
3. ***General versus Specific***. I found the information in this book balanced to a certain extent. The chapters usually started by a wide concept but became very specific as it progressed. At times, I felt it was way too specific with all the tables and numbers in it.
4. ***Global versus Local***: There was more stress in this book on the Egyptian context than on the global one. However, I believe that linkages to global environmental problems could have been beneficial in drawing connections between local and global environmental problems.
5. ***Addresses student teachers or general audience***. The book deals quite a bit with environmental education and the teachers' roles. In that sense it prepares the students in a way to use the information in it for teaching. The focus on numbers and tables however, gave it a more "specialized" nature.

Educational course textbook (1998)

Introduction

This book is written by a number of Faculty members in the Faculty for a core course for all undergraduate and graduate students in the Faculty. It contains nine chapters with 207 pages.

Chapter one addresses the importance of the teachers' acquaintance and knowledge with the community where s/he lives as well as works. It presents a number of social theories and how they address the social problems. It also gives an understanding of society and its nature and dynamics.

Chapter two presents definitions of social problems and ways to studying them. It also presents different characteristics of social problems and their geographical, social, cultural and educational dimensions. It offers 'scientific' methods to studying such problems as well which could be seen as an equivalent to a crash course in quantitative methodology.

Chapter three gives an account of different social science research and different methodologies and includes a part on the importance of research to teachers so they can understand social problems.

Chapter four addresses the connection between education and social mobility. It gives a definition of social mobility, and its different kinds. It also offers ways of measuring social mobility. It extends the discussion to cover the problems students could face in class-stratified societies as well.

Chapter five talks about education and development. It focuses on how education can have a big effect in efforts for development as a whole and a particular role in social and political development.

Chapter six presents the role that non-formal education can play in development. The chapter addresses the importance of establishing a strong non-formal education system in developing countries pointing to its positive effect.

Chapter seven addresses the relationship between education and the challenges of employment. It presents the importance of vocational education as well as gives examples of different countries in that area.

Chapter eight presents a comparative study between the effects of private tutoring on a rural and urban area respectively. It provides a lot of empirical data but does not address root causes of the problems.

Chapter nine presents the case for illiteracy in Egypt and the need for adult education literacy programs. It evaluates the current efforts in adult education arguing that there was a need for more.

Content Analysis Criteria

1. ***Publication dates*** for the references used in the books The book contained around 80 references ranging in dater of publication from the 1960s to the mid 1990s. Half the references were English.
2. ***Descriptive versus Analytical***. In general the book was quite dsecriptive defining theories and social problesm, or describing research studies. There was no obvious stress on root causes of social problems or any other issue discussed in the book.
3. ***General versus Specific***. The book offered both general and specific information. It was general in the description of problems, theories, research methods and the like. However, it was quite specific when it addressed certain topics like the private tutoring or adult illiteracy programs.
4. ***Global versus Local***: Except for the research studies that the book included, the book could be seen as abstract. It stressed more theory than actual connections to either local or global contexts.
5. ***Addresses student teachers or general audience*** It could be argued that the book was addressing student teachers but I felt it was too simplistic to have any effect. However, it could also be seen as too specialized for someone who is not interested in any of the topics in the book.

APPENDIX E

Survey Questionnaire

Dear Colleague,

This questionnaire is part of the research for the completion of a doctoral degree from the University of Alberta in Canada. The title of the thesis is "Environmental Education in an Egyptian University: The Role for Teacher Educators". Teachers are very important in disseminating environmental education and environmental awareness between their students who are the leaders and citizens of the future. The researcher has chosen the Faculty of Education at Heliopolis University for the research, as it is the oldest and most prominent Faculty for teacher education in Egypt and the whole region.

As the period of preparing to become a teacher is one of, if not, the most important periods in which teachers acquire awareness and the necessary skills to address and deal with environmental problems, the research is up to investigate the reality of this preparation through: First: teacher educators in different departments of the Faculty. Second: Future teachers (student teachers) and their opinions, understandings and views of what they learn and to the extent they benefit from it and their readiness to teach it to their future students.

The researcher asks you in advance for your cooperation and asks you to kindly fill in the questionnaire with the information called for. All information is confidential and will be used for the purpose of research only. Names are not required for this research.

Gender: ( ) Male ( ) Female

Department: ....

Grade (year): ....

Subject during which you filled in this questionnaire: ....

PLEASE DO NOT LEAVE ANY QUESTION(S) UNANSWERED

1. What are the most important environmental problems in Egypt in your opinion?

   ....

   ....

2. What do you think are the causes of these problems?

   ....

   ....

   ....

3. Does any of the courses you are taking at this faculty address any of these problems?

Yes ( ) No ( )

If the answer is no, please move to question no.4 If the answer is yes,

(a) What are these courses: ....

....

(b) How are these courses taught?

- Lectures ( )
- Open discussions and dialogue ( )
- Term papers and research ( )
- Extra curricular seminars and/or symposiums ( )
- Other(s) (please specify): ....

(c) Have you benefited from these courses?

Yes ( ) In what ways? ....

....

No ( ) Why didn't you, or what were the obstacles against you benefiting from these courses? ....

....

(Please move to question no.5.)

(1) For who answered "no" to question no.3: Do you think that these environmental problems or any others could be addressed in any of the courses?

Yes ( ) No ( )

If yes, what are these courses? ....

....

How could these problems be addressed? ....,

....

(2) Have you participated in any environmental activity/ies:

(a) in the faculty:

Yes ( ) what are these activities? ....

No ( ) Why not? ....

(b) in your local community:

Yes ( ) what are these activities? ....

No ( ) why not? ....

(3) What are the obstacles against the students' participation in environmental activities?

....

....

(4) Why did you choose to study at the faculty of education?

- Credentials ( ) - Like the teaching profession ( )
- A guaranteed job ( ) - Financial guarantee ( )

- Private tutoring ( )
- Other(s) (please specify): ....

(5) Rank the courses your are currently taking starting with the one you benefited most from and so on.

....

....

(6) Have you utilized any of these courses during your practicum?

Yes ( ) How? ....
No ( ) Why not? ....

(7) What is the course you benefit from the most? ....

....

....

(8) Teaching n this faculty depends mainly on:

- Discussion and dialogue:
  To the most extent ( ) to a limited extent ( ) never ( )
  How many faculty members do that? ( )
- Encouraging of research
  To the most extent ( ) to a limited extent ( ) never ( )
  How many faculty members do that? ( )
- Sending students to the faculty libraries and other libraries:
  To the most extent ( ) to a limited extent ( ) never ( )
  How many faculty members do that? ( )
- Other opinion (please specify): ....
  ....

(14) The exams in the faculty:

- Measures students' capability of memorization:
  Mostly ( ) sometimes ( ) never ( )
- Measures students' creativity:
  Mostly ( ) sometimes ( ) never ( )
- Measures students' ability to think:
  Mostly ( ) sometimes ( ) never ( )
- Measures students' intelligence and uniqueness:
  Mostly ( ) sometimes ( ) never ( )
- Other opinion(s) (please specify): ....

(15) What do you think of the faculty in terms of:

- Building and lecture halls:
  Adequate ( ) Inadequate ( ) why? ....
  ....
- Cleanliness and general appearance:
  Clean ( ) Not clean ( ) why do you think that is? ....

....

- Educational facilities:
  Enough for everybody ( ) Not enough for everybody ( )
- Library:
  adequate ( ) Inadequate ( ) why? ....
  ....

(16) The relationship between students and staff members is:
- A formal and indirect relationship in lectures only:
  Mostly ( ) sometimes ( ) rarely ( )
- a democratic relationship that allows for dialogue during lectures:
  Mostly ( ) sometimes ( ) rarely ( )
- a nice human relationship evolving through faculty activities:
  Mostly ( ) sometimes ( ) rarely ( )
- no kind of relationship between students and faculty members:
  Mostly ( ) sometimes ( ) rarely ( )
- Other opinion(s) (please specify): ....

(17) Does the faculty qualify its students to play an actual role in the educational process in the future?

Yes ( ) How? ....

No ( ) Why not? ....

(18) Does the faculty qualify its students to playa positive role in environmental education?

Yes ( ) How? ....

No ( ) Why not? ....

(19) What are the obstacles against that? ....
....

(20) What are your suggestions to overcome these obstacles? ....
....

With my utmost gratitude and appreciation.

Sincerely,

Solafa Goueli,
Researcher

APPENDIX F

Results of the Students' Survey

The total number of questionnaires distributed was 280. We received 129 filled questionnaires. They were filled during three of Hisham's classes of Education and Societal Problems/Issues. Despite our assurance to students that the information they provide would only be used for research purposes and confidential, the returned questionnaires were less than half of the original number. However, the participants and I regarded it a considerable result.

Table 9 Gender Distribution

	Female	Male	Total
Frequency	106	21	127
Percentage	16.5%	83.5%	100%

The difference in number between male and female students seems to correspond with the ratio between male and female students in the faculty. There was no significant difference in opinion between male and female students in regards to environmental problems in Egypt. Although they mentioned a number of problems directly related Water, air and food pollution were on the top of the list of environmental problems that the students mentioned. Other problems included waste problems, noise, climate warming, pesticides, ozone and Helwan (related to pollution).

Table 10 Courses that address (or have the potential to address) environmental problems.

	Yes	No	Total
Frequency	81	47	128
Percentage	63.3%	36.7%	
	What are these courses?	What are the courses that may address Environmental problems	
	Environmental Studies		
Frequency	34	15	49
Percentage	42.0%	31.91%	38.3%
	Education and Societal Problems/Issues		
Frequency	33	18	51
Percentage	40.7%	38.30%	39.8%
	All Educational Foundations Courses		
Frequency	14	10	24

Percentage	17.3%	21.28%	18.8%
Frequency	**All Courses**		
	5	3	7
Percentage	6.2%	4.26%	5.5%
	Specialization Courses		
Frequency	2	2	5
Percentage	2.5%	6.38%	3.9%

It is interesting to note that there was congruence in opinion between students who mentioned that courses in the Faculty address environmental issues and between those who thought otherwise. The above table shows that both categories of students mentioned the same courses as both addressing or should be addressing environmental issues.

Table 11 Methods of Teaching Courses that Deals with Environmental Issues

Teaching method	Frequency	Percentage
Lectures	72	55.8%
Research Papers	60	46.5%
Discussions	30	23.3%
Other	6	4.7%

Table 12 Assessment of courses' usefulness in regards to environmental problems

	Yes	No	Total
Frequency	48	22	70
Percentage	68.6%	31.4%	100%

Some students who argued that they benefited from the courses in regards to environmental problems indicated that these courses made them aware of the problems and provided some pointers toward their solutions. Others who claimed that they did not benefit from the courses argued that the problems discussed in these courses are suitable for a person living in an ivory tower, and has nothing to do with what happens outside the classroom.

Table 13 Participation in Environmental Activities

	Yes	No	Total
	In the Faculty		
Frequency	5	122	127
Percentage	3.9%	96.1%	100%
	In the community		
Frequency	20	79	99
Percentage	20.2%	79.8%	100%

Cleaning and planting trees were the two activities listed by those who participated in environmental activities. Those who did not participate in any activities reasons that they did not find the proper opportunity or encouragement from peers; others criticized the activities that they are showing off mechanisms and not for real participation.

Table 14 Reasons behind choosing the faculty of education

Reason	Frequency	Percentage
Credentials	54	24.9%
Secure Job after graduation	60	27.6%
Private Tutoring	18	8.3%
Love Teaching	61	28.1%
Contract in the gulf	17	7.8%
Other	7	3.2%

Other reasons mentioned included: the liking of their own teachers, family pressure and the desire to positively participate in building the Egyptian future.

Table 15 Ranking of courses according to their benefits

Course	Frequency	Percentage
Specialization Courses	54	40.6%
Teaching Methodologies	21	15.8%
Psychology Courses	37	27.8%
Educational Foundation	4	3.0%
Education and Societal Problems	5	3.8%
Environmental Studies	1	0.8%
Other	11	8.3%

Most of the students who did not select a particular subject reasoned that there are no differences among courses taught at the faculty due to the lack of practicality of the theories taught at these courses.

Table 16 Use of Knowledge acquired at the faculty in the practicum period

	Yes	No	Total
Frequency	94	37	131
Percentage	71.8	28.2	100

Many of the students who acknowledge that they deployed the knowledge acquired in the faculty during their practicum periods mentioned the "teaching methodologies" courses and acknowledged their use in preparing for classes and conveying information to their students. However, those who answered otherwise, put the impracticality of the theories taught at the courser.

Table 17 Teaching in the Faculty Mainly Depends on

		To the most extent	To some extent	Not at all	Total
Banking of Information	**Frequency**	46	57	7	110
	Percentage	41.8%	51.8%	6.4%	100%
Discussion and Dialogue	**Frequency**	12	80	13	105
	Percentage	11.4%	76.2%	12.4%	100%
Encouragement of Research	**Frequency**	45	43	6	94
	Percentage	47.9%	45.7%	6.4%	100%
The library	**Frequency**	39	68	19	126
	Percentage	31.0%	54.0%	15.1%	100%

Numbers reported while answering this question varied widely from 1 professor to more than 10. While analyzing the survey results, I realized that these questions did not clearly define a frame of reference for their answers. It appeared that some students answered the question referring to the current term; others were referring to the current academic year or maybe to their whole experience at the faculty,. Due to the ambiguity of the question, I did not tabulate the answers. However, the majority of the answers suggest that banking of information is the main teaching technique deployed.

Table 18 Capabilities Measured by Exams

		Always	Sometimes	Never	Total
Capability of Memorization	**Frequency**	104	14	7	125
	Percentage	83.2%	11.2%	5.6%	100%
Creativity	**Frequency**	5	58	44	107
	Percentage	4.7%	54.2%	41.1%	100%
Ability to think	**Frequency**	13	74	18	100%
	Percentage	12.4%	70.5%	17.1%	105
Intelligence and Uniqueness	**Frequency**	7	47	52	100%
	Percentage	6.6%	44.3%	49.1%	106

Some students commented that the faculty's curricula do not encourage creativity, most of the professors' focus on the quantity rather than the quality. One student commented that professors, who encourage creativity, are the same who allow discussions in their lectures and encourage research and the use of the library. However, some students argued that memorization and intelligence are correlated.

Table 19 Students' Assessment of the faculty's physical appearance/facilities

	Adequate	Inadequate	Total
Buildings and Lecture Halls			
Frequency	39	90	129
Percentage	30.2%	69.8%	100%
Cleanliness and general appearance			
	Clean	Not Clean	Total
Frequency	75	54	129
Percentage	58.1%	41.9%	100%
Educational Facilities/Resources			
	Enough	Not Enough	Total
Frequency	15	112	127
Percentage	11.8%	88.2%	100%
Library			
	Adequate	Inadequate	Total
Frequency	50	79	129
Percentage	38.8%	61.2%	100%

The reasons given by students who judged the faculty facilities and resources as inappropriate include: the lack of space to accommodate all students, the lack of proper acrostic equipments and inappropriate illumination. The inadequacy of the library was owed to the lack of time to spend at the library and the small number of volumes held at it.

Table 20 Type of Relationship Between Student teachers and their Educators

Relation		Mostly	Sometimes	Rarely	Total
Official	**Frequency**	54	44	15	113
	Percentage	47.8	38.9	13.3	100
Democratic	**Frequency**	33	69	7	109
	Percentage	30.3	63.3	6.4	100
Human	**Frequency**	16	26	56	98
	Percentage	16.3	26.5	57.1	100
No Relation	**Frequency**	23	25	55	103
	Percentage	22.3	24.3	53.4	100

Table 21 The faculty's ability to qualify its students to play an actual role in the education process

	Yes	No	Total
Frequency	51	75	126
Percentage	40.5%	59.5%	100%

Reasons for not qualifying students to play an actual role in the education process included: professors' focus on information banking, the unsuitability of educational media used to prepare teachers, the separation between what is taught at the faculty and the current state of the teaching profession, the lack of attention to the practicum periods and because our educators are not playing that role "those who don't have it, cannot give it." (a proverb).

Table 22 The faculty's ability to qualify students to play a positive role in environmental education

	Yes	No	Total
Frequency	41	82	123
Percentage	33.3	66.7	100%

The obstacles to proper qualification included: the unavailability of books about these problems, the lack of resources, the shortage of time, carelessness, the educators' focus on banking of information and the small number of course that address environmental problems, the lack of environmental awareness among inside and outside the university and the impracticality of addressing these problems due to the inability to apply proposed solutions. Suggested solutions to overcome these obstacles included: increasing field studies, enrichment of the library, increasing the non-curricular activities that address the environment and encouraging students to participate in these activities, the professors' participation in these activities, increasing the focus on upbringing rather than information banking, increasing the number of courses that address environmental education.

APPENDIX G

Student Teachers' Practicum Observation Sheet

Personal information about the Student Teacher

- Name: ....
- Gender: .... Date of birth: ....
- Department: ....
- Grade/Year: .... Expected date of graduation: ....
- Previous teaching experience (if any): ....
- Educational stage Subject from to (1) (2)
- Duration of practicum in the current school: ....
- Proximity of school to the residence of the student teacher:
  far ( ) near ( )

Information about the visit to the school

1. Educational district: ....
2. Name of school: ....
3. Grade: .... 4. Class: ....
4. Date of visit: .... 5. Period: ....
5. Subject: .... 7. Title of topic: ....

Name of practicum supervisor or evaluator: ....

Observations of the student teacher

1. Do you think the student teacher is competent enough in teaching the subject?
   Yes ( ) No ( )

   If the answer is no, then, why?
   a. The student teacher is not specialized in the subject ( )
   b. The student teacher has not been trained on teaching the subject ( )
   c. Other reasons (please specify): ....
   ....
   ....
   ....

2. Do you think the student teacher is capable in of passing of information and facts to his students in an appropriate way?
   Yes ( ) No ( )

   If the answer is no, then, why?
   a. The student teacher is not specialized in the subject ( )
   b. He/she is not competent enough in the subject ( )
   c. He/she is not specialized in the subject ( )

d. Shortage of experience ( )
e. (S)He did not make enough effort to pass the information to the students ( )
f. Nature of the subject (e.g. subject is difficult to understand) ( )
g. Incapability of class control ( )
h. High density of students in the classroom ( )
i. Incapability of student teacher to stimulate his/her students' interest and attention to the subject ( )
j. Weakness of student's despite that the student teacher made all the necessary effort ( )
k. Other reasons (please specify): ……………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

3. Does the student teacher invest (spend) the time of the lesson appropriately?
Yes ( ) No ( )

If the answer is no, then, why?
a. The student teacher is not specialized in the subject ( )
b. Student teacher do not prepare lesson before hand ( )
c. Student teacher wastes the lesson time by taking about things that have nothing to do with the lesson ( )
d. Student teacher wastes time by trying to keep the classroom under control ( )
e. Student teacher wastes the lesson time by keeping the students busy with other things than the lesson ( )
f. Student teacher leaves the students to read the lesson by themselves from the textbook ( )
g. Slowness of student teacher causes the wasting of time of the lesson without so much benefit ( )
h. Student teacher spends most of the lesson time in marking ( )
i. Other evidence (please specify): ……………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

4. Does the student teacher use the textbook during the lesson time?
Yes ( ) No ( )

If the answer is no, then, why?
a. The student teacher is not specialized in the subject ( )
b. Text book has not been delivered to the school ( )
c. Student teacher's belief that the textbook is inappropriate to the students' level ( )
d. Most of the students do not bring their text books to class ( )
e. Unwillingness of student teacher to use the textbook in

educating the students about the subject ( )

f. Other reasons (please specify): ....
....
....
....

g. If the answer is yes, do you think the student teacher uses the textbook in a correct way?
Yes ( ) No ( )

If the answer is no, then, why? ....
....

5. Does the student teacher use an extra book (non curricular book during the lesson?
Yes ( ) No ( )

If the answer is no, then, why?

a. Student teacher's belief that the text book provided by the school is not fit for teaching ( )
b. The external book contains the answers to the questions in the textbook ( )
c. The simple way in which the extra book explains the lesson and the abundance of examples in it and the ease in following it in comparison to the textbook ( )
d. The external book has lots of questions that is fit for different students with different attention spans and competencies ( )
e. Other reasons (please specify): ....
....
....
....

6. Does the student teacher use and educational medium (e.g. an audio visual devise) while teaching?
Yes ( ) No ( )

If the answer is no, then, why?

a. The nature of the subject does not need or require the use of such a medium ( )
b. There is no such medium available at school ( )
c. The student teacher does not know how to use such medium ( )
d. The difficulty of having getting such a medium because of bureaucracy ( )
e. Unwillingness of the student teacher to use any educational media ( )
f. Other reasons (please specify): ....
....
....

....

If the answer is yes, do you think the medium used was appropriate for the lesson? Yes ( ) No ( )

If the answer is no, then, why?

a. The student teacher did not know how to operate the medium properly ( )
b. The unavailability of substances or needed to operate the medium ( )
c. The media available is inappropriate for use ( )
g. Other reasons (please specify): ....
....
....
....

7. Do you think the interaction between the student teacher and the students in the classroom are up to the needed level?

Yes ( ) No ( )

If the answer is no, then, why?

a. The student teacher rarely has a dialogue with the students ( )
b. The student teacher uses all the time of the lesson for explaining without giving the students the chance to talk ( )
c. The student teacher leaves the students read their books or do their homework ( )
d. The student teacher makes fun of the students or puts their opinions down which makes them refuse to share their views and thoughts ( )
e. Incapability of student teacher to attract the students attention or stimulate their interests so they do not interact with him/her ( )
f. Other reasons (please specify): ....
....
....
....

8. Do you think that the student teacher's has a friendly relationship with the students outside the sphere of the lesson or classroom ?

Yes ( ) No ( )

If the answer is no, then, why?

a. The student teacher is so harsh with the students which makes them fear him ( )
b. The student teacher uses physical ways for disciplining the students which makes them avoid him/her ( )
c. The student teacher is so easy with the students which make him/her appear to have a weak personality ( )
d. The student teacher deals with the students in an unethical way and does not act as a role model ( )

e. The student teacher does not listen to students which makes them avoid him ( )
f. The student teacher isolates him/herself from the students and does not try to deal with them outside the classroom ( )
g. The student teacher is unjust in dealing with the students and prefers some of them to others with no obvious reason ( )
h. Other reasons (please specify): ....
....
....
....

9. Do you think that the student teacher has positive attitudes towards the profession of teaching?

Yes ( ) No ( )

If the answer is no, then, why?
a. The reluctance or feelings of negligence during teaching of the lesson ( )
b. His/her repeated absence from school ( )
c. The student teacher is usually late and comes after the beginning of the period ( )
d. The student teacher usually have a high temper when dealing with students ( )
e. The student teacher does not have good relations with his/her colleges and/or the school management ( )
f. Other reasons (please specify): ....
....
....
....

10. DO you think that the student teacher has good relations with his/her colleges and other teachers in the school ?

Yes ( ) No ( )

If the answer is no, then, why?
a. There is always some kind of quarrel between the student teacher and most of the staff members ( )
b. The disliking of most the staff members of the student teacher for personal reasons ( )
c. The student teacher's continuous criticism of his/her colleagues on no objective basis ( )
d. The student teacher's continuous arguments with his/her colleagues ( )
e. Other reasons (please specify): ....
....
....
....

11. Do you think that the student teacher has good relations with the school management?

Yes ( ) No ( )

If the answer is no, then, what are the evidence?

a. The student teacher is always questioned by the school management ( )
b. The student teacher has continual arguments with the school management ( )
c. Repeated absence from the school with no legitimate reason ( )
d. Not following the rules and/or regulations set by the school management ( )
e. Unwillingness of the student teacher to participate in any curricular activities ( )
f. The student teacher's thinks the school management is not doing a good job ( )
g. Other evidence (please specify): ....
....
....
....

12. Do you think that the student teacher evaluates his/her students in an appropriate efficient way?

Yes ( ) No ( )

If the answer is no, then, why?

a. The student teacher thinks the formal examination at the end of the term is a good enough way to evaluate the student's ( )
b. The student teacher does not give his/her students any homework that they can work on on their own ( )
c. The student teacher gives the students homework that he/she does not mark or care to check ( )
d. The student teacher does not follow up on the students' achievement ( )
e. Other reasons (please specify):
....
....
....
....

13. Does the student teacher participate in the clubs or fraternities that are organized at school ?

Yes ( ) No ( )

If the answer is no, then, why?

a. Unwillingness of he student teacher to participate in such activities thinking that it is not part of a teacher's job ( )

b. Lack of time or the business of the student teacher ( )
c. The student teacher does not stay at school if he/she does not have a class ( )
d. Other reasons (please specify): ……………………..……………………..
……………………………………………………………………..………
……………………………………………………………………...……
……………………………………………………………………...……

14. Please give the student teacher a in each of the following areas:

	Excellent	Very good	good	fair	weak
a. Competency of subject and in teaching	( )	( )	( )	( )	( )
b. Growth as a teacher and continuous development	( )	( )	( )	( )	( )
c. Relationship with the students	( )	( )	( )	( )	( )
d. Relationship with colleagues	( )	( )	( )	( )	( )
e. Relations with school management	( )	( )	( )	( )	( )
f. Participation in extra curricular activities	( )	( )	( )	( )	( )